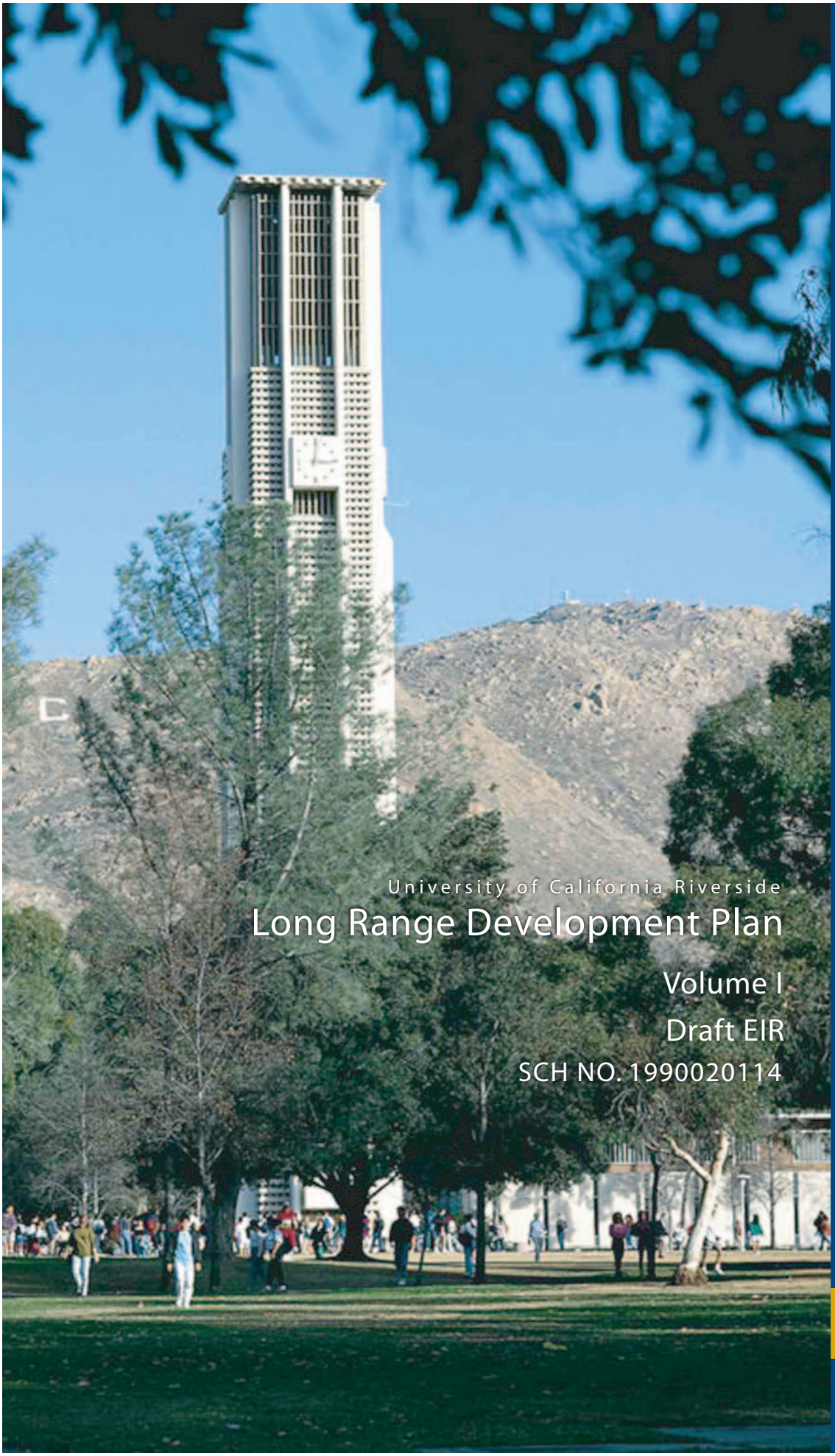

University of California Riverside

Long Range Development Plan

Volume I

Draft EIR

SCH NO. 1990020114

UCR 50th ANNIVERSARY

A Tradition of Excellence
A Future of Distinction

1954 - 2004

April 2005

UNIVERSITY OF CALIFORNIA, RIVERSIDE
2005 LONG RANGE DEVELOPMENT PLAN

Volume I

Draft Environmental Impact Report
SCH No. 1990020114

Prepared for:
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April 2005

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Chapter 1 INTRODUCTION

1.1 BACKGROUND

This Environmental Impact Report (EIR) assesses the potential environmental effects that would result from implementation of the proposed 2005 Long Range Development Plan (LRDP) for the University of California at Riverside (the campus), which is being proposed to accommodate increased student enrollment and expand development on the UCR campus.

The California Department of Finance and the University of California (UC) have both projected a substantial increase in the number of qualified California students that will seek access to higher education. Because the UC remains committed to fulfilling its responsibility under the California Master Plan for Higher Education to accommodate all eligible students from among the top 12.5 percent of high school graduates who choose to attend, the University estimated the need to accommodate 63,000 additional students (measured as full time equivalent [FTE] students) from the period 1998/99 through 2010/11. Because of the magnitude of this increase, expansion of enrollment at most, if not all, of the nine existing UC campuses and the development of the tenth UC campus, the University of California, Merced, may be required to accommodate the projected systemwide enrollment growth during this decade and beyond 2010.

In January 2000, the President of the UC asked each campus to consider the feasibility of enrollment growth and UCR identified a planning target for the UCR campus of approximately 25,000[1] students by the year 2015/16.[2] Because this enrollment planning target would exceed the projection of 18,050 students provided in the current (1990) LRDP, the University has prepared the 2005 LRDP and this EIR to address the long-term and cumulative implications of that growth.

As stated in Section 21080.09 of the California Public Resources Code, the 2005 LRDP is a "physical development and land use plan to meet the academic and institutional objectives for a particular campus or medical center of public higher education." The 2005 LRDP will guide physical development on the UCR campus, consistent with the instruction, research, and public service mission of the University. The 2005 LRDP identifies program goals to be achieved during the planning horizon, estimates the net new building space required to achieve these goals, articulates land use policies and environmental strategies to guide the physical development process, and suggests potential future uses of campus land. The LRDP is not a commitment to proceed with any specific project.

[1] Derived from 1 FTE = 1 Headcount. UCR uses a conversion rate of 1 FTE (0.95 rounded up) = 1 Headcount, and for the purposes of the LRDP, 1 FTE = 1 Headcount with the "student" taking full course loans every quarter with graduation in four years.
[2] The academic year 2015/16 would begin in the Fall of 2015 and end in the Spring of 2016.

On July 19, 1990, The Board of Regents of the University of California (The Regents) adopted the 1990 LRDP for UCR to guide the physical development of the UCR campus in order to meet the campus's academic goals and objectives. The 1990 LRDP proposed a total of approximately 10.13 million gross square feet (gsf) of building space on the campus to support a total student enrollment of 18,050 students by the year 2005/06. In addition, the 1990 LRDP proposed a goal of housing 35 percent of the UCR student population in on campus or campus-controlled student housing by the year 2005/06. As of the 2001/02 academic year, the campus enrolled approximately 12,703 students (three-quarter average headcount) and occupied a total of approximately 4.7 million gsf of academic buildings and related support facilities.

The 2005 LRDP proposes development of approximately 7.1 million gsf of additional academic buildings and support facilities on the UCR campus, including student housing, to accommodate a future enrollment of 25,000 (FTE or three-quarter average headcount) students by the year 2015/16. The housing goal under the 2005 LRDP would be to provide on-campus or campus-controlled student housing for 50 percent of the student population. The campus currently has approximately 4.7 million gsf of buildings and facilities. Thus, the 2005 LRDP would propose a maximum of 11.8 million gsf of development on the UCR campus by the year 2015/16. Although this is the projected amount of development for the campus, the actual amount of development would also depend on the Campus' ability to obtain available funding. A comparison of the projected population and campus development between the 1990 LRDP and 2005 LRDP is provided in Table 1-1.

Table 1-1 1990 LRDP and 2005 LRDP Projected Population and Development in Gross Square Feet

Category	*1990 LRDP Projections (2005/06)*	*2001/02 Baseline*	*2005 LRDP Projections (2015/16)*	*Net 2005 LRDP Increase From 2001/02 Baseline*
Student Population (three-quarter average headcount)	18,050	12,703	25,000	12,297
Campus Development (gsf)	10,134,211	***4,697,016***	11,802,707	***7,105,691***
Campus Population	—	17,641	35,540	17,899

Source UCR 2005 LRDP; UCR 1990 LRDP

1.2 PURPOSE OF THE EIR

UCR, as directed by the University of California, has prepared this EIR for the following purposes:

- To satisfy the requirements of CEQA (Public Resources Code, Sections 21000–21178), the 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 LRDP, its possible environmental effects, possible measures to mitigate those effects, and alternatives to the proposed LRDP

- To enable The Regents to consider environmental consequences when deciding whether to approve the LRDP
- To provide a basis for preparation of future environmental documents
- To serve as a source document for information needed by several regulatory agencies to issue permits and approvals for the proposed 2005 LRDP or subsequent on-campus development

The determination that the University is the "lead agency" is made in accordance with Sections 15051 and 15367 of the CEQA Guidelines, which define the lead agency as the public agency that has the principal responsibility for carrying out or approving a project. This EIR reflects the independent judgment of the University regarding the potential environmental impacts, the level of significance of the impacts both before and after mitigation, and the mitigation measures proposed to reduce impacts.

1.3 TYPE OF EIR

The 2005 LRDP is a land use plan that guides the physical development of the UCR campus. It is not an implementation plan, and adoption of the LRDP does not constitute a commitment to any specific project, construction schedule, or funding priority. Rather, it describes the entire development program of approximately 7.1 million gsf for the campus through 2015/16. The 2005 LRDP EIR is a program-level EIR that evaluates the effects of implementation of the entire LRDP.

Any proposal for future development on the UCR campus must be approved by the Chancellor and other appropriate segments of the campus community), by the UC Office of the President, and/or The Regents, as appropriate, and comply with CEQA. As future projects are proposed, UCR will determine whether additional environmental review is required. As required by Section 15168(c) of the CEQA Guidelines, subsequent projects would be examined in light of this Program EIR to determine whether the potential environmental effects of the project were adequately addressed in this EIR, and whether any additional mitigation measures are required. If the analysis in this Program 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 EIR, subsequent environmental documentation would be prepared, consistent with Sections 15162 through 15164 of the CEQA Guidelines.

1.4 EIR REVIEW PROCESS

A Notice of Preparation (NOP) was prepared and distributed to the State Clearinghouse, trustee agencies, responsible agencies, and other interested parties on December 14, 2001. 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 (DEIR). The NOP and comments on the NOP are included as Appendix A in Volume II of this EIR.

During the scoping period, several meetings were held to discuss the range of issues, alternatives, and potential mitigation measures to be addressed in this DEIR. A public scoping meeting was held on January 8, 2002, to solicit input from interested agencies, individuals, and organizations. In addition,

individual meetings were also held between January 8 and January 12, 2002 with the California Department of Fish and Game; the County of Riverside (Planning Department); the City of Riverside; the South Coast Air Quality Management District; and the Santa Ana Regional Water Quality Control Board.

This DEIR is being circulated for review and comment to the public and other interested parties, agencies, and organizations for a 45-day review period. During the review period, copies of the LRDP and DEIR will be available for review at Rivera Library (UCR campus) and the City of Riverside Main Library at 3581 Mission Inn Avenue.

The documents referenced in this report will also be available for review during normal business hours at UC Riverside Capital and Physical Planning, Bannockburn Room F-101, 3637 Canyon Crest Drive, on the UCR campus and will be available on line at www.lrdp.ucr.edu. Written comments on the EIR may be provided by e-mail or be sent via U.S. mail or facsimile and addressed to the following:

Campus Physical Planner Nita Bullock
UCR Capital and Physical Planning
3637 Canyon Crest Drive, F-101
Riverside, CA 92507
Fax: (951) 827-2402
e-mail: lrdpeir@ucr.edu

Following the public hearing, and after the close of the written public comment period on the DEIR, responses to written and recorded comments will be prepared and published. The Final EIR, which will consist of the DEIR, comments on the DEIR, 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 2005 LRDP, Section 15090 of the 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
- 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 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 LRDP, and the LRDP would have significant and unavoidable impacts, The Regents will also be required to identify the specific reasons for approving the project, 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 explain the specific reasons why the benefits of implementation of the UCR 2005 LRDP outweigh the unavoidable environmental effects that would result from LRDP implementation.

1.5 INTENDED USES OF THE EIR

As previously discussed, this EIR is intended to inform the public, interested organizations and agencies, and The Regents of the potential environmental impacts of the 2005 LRDP. In the event that the 2005 LRDP is approved, this EIR will be used as the basis for subsequent environmental analysis for future development under the 2005 LRDP, as allowed by Section 15152 of the CEQA Guidelines.

Under CEQA, other public agencies that may have discretionary authority over the project, or aspects of the project, are considered responsible agencies. The responsible agencies for the 2005 LRDP include, but are not necessarily limited to, the State Water Resources Control Board, Regional Water Quality Control Board, South Coast Air Quality Management District, Caltrans, California Department of Fish and Game, and the City of Riverside (Public Works Department). This document may be used by the responsible agencies to comply with CEQA in connection with permitting or approval authority over the project or individual projects that may be proposed during the planning horizon of the 2005 LRDP. The University prepared this EIR to address all State, regional, and local government approvals needed for construction and/or operation of the project, whether or not such actions are known or are explicitly listed in this EIR. Examples of the anticipated approvals required to implement the 2005 LRDP include the following:

- University of California Board of Regents
  - Certification of the EIR
  - Adoption of the Statement of Overriding Considerations
  - Approval of the proposed 2005 LRDP
  - Adoption of the Findings of Fact
  - Adoption of the Mitigation Monitoring and Reporting Program
- Santa Ana Regional Water Quality Control Board/State Water Resources Control Board
  - National Pollutant Discharge Elimination System General Construction Permit (for individual construction projects of a particular size or projects that result in point source discharges)
- South Coast Air Quality Management District
  - Permits to Construct and/or Permits to Operate (for any new or relocated stationary sources of equipment that emit or control air contaminants)
- Caltrans/City of Riverside Public Works Department
  - Encroachment Permits (for individual projects requiring work within State or City rights-of-way)

- California Department of Fish and Game
  - › Streambed Alteration Agreements

In addition, federal agencies with potential regulatory authority over the project include the United States Fish and Wildlife Service and the United States Army Corps of Engineers. Examples of the anticipated approvals from these federal agencies required to implement the 2005 LRDP include the following:

- United States Fish and Wildlife Service
  - › Incidental take authority for listed or candidate species
- United States Army Corps of Engineers
  - › Clean Water Act permits related to loss of wetlands and jurisdictional waters

1.6 ORGANIZATION OF THE EIR

This EIR is organized in two volumes (Volumes 1 and 2). Volume 1 addresses the environmental impacts of the physical development of the 2005 LRDP, while Volume 2 provides technical appendices to Volume 1. Volume 1 of this EIR describes the existing environmental conditions on and in the vicinity of the project site (the UCR campus), analyzes potential project-related impacts on environmental resources, identifies LRDP Planning Strategies and existing Campus Programs and Practices that may reduce or avoid impacts, proposes mitigation measures to reduce the magnitude of significant impacts, and evaluates a reasonable range of alternatives to the proposed project that may potentially eliminate, reduce, or avoid significant impacts while attaining most of the basic project objectives. In addition to project-related impacts, this EIR also provides an evaluation of cumulative impacts that would be caused by the project in combination with other future projects or projected growth that could occur in the region. In this fashion, the cumulative impact analysis considers the additive effect of future projects, both on and off the campus, including the 2005 LRDP. As required by Section 15126.2(d) of the CEQA Guidelines, this EIR also provides an analysis of growth-inducing impacts, which are defined as "environmental impacts that could result in additional growth by the proposed project by either removing an obstacle to development or by generating substantial increased growth of the local or regional economy."

The contents of Volume I of the 2005 LRDP EIR include the following:

- *Chapter 1: Introduction*—This section provides an overview of the background of the 2005 LRDP, 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.
- *Chapter 2: Summary*—This section includes 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.

- *Chapter 3: Project Description*—This section provides a detailed description of the proposed project, including its location, background information, objectives, Planning Strategies, and physical characteristics.
- *Chapter 4: Environmental Setting, Impacts, and Mitigation Measures*—This section contains an analysis of environmental impacts for each environmental issue area. Each environmental issue area contains a description of the environmental setting (or existing conditions), identifies the threshold of significance used to determine whether impacts are significant (or less than significant), 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 chapter, provides an overview of the scope and format of the environmental analysis, including a description of the baseline for analytical purposes.
- *Chapter 5: Other CEQA Considerations*—This section 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.
- *Chapter 6: Alternatives*—This section 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.
- *Chapter 7: Report Preparers/Organizations and Persons Consulted*—This section identifies all federal, state, or local agencies, other organizations, and/or private individuals consulted during preparation of the EIR, as well as the firm who prepared the EIR under contract to the University.

The appendices comprise the contents of Volume II of the 2005 LRDP EIR, as follows:

- Appendix A—Initial Study / Notice of Preparation, NOP Responses, and Summary of Agency Consultations
- Appendix B—Biological Resources Technical Report
- Appendix C—Air Quality Data
- Appendix D—Health Risk Assessment
- Appendix E—Cultural Resources Technical Report
- Appendix F—Geology Technical Appendix
- Appendix G—Hydrologic Analysis of Peak Runoff Conditions
- Appendix H—Traffic Impact Study
- Appendix I—Water Supply Assessment
- Appendix J—Noise Data

1.7 LIST OF ABBREVIATIONS

The following comprehensive list of abbreviations is provided to clarify references used in this EIR.

Table 1-2 List of Abbreviations

AB	Assembly Bill
ADT	average daily trips
AFY	Acre-feet per year
ANSI	American National Standards Institute
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
AVR	Average Vehicle Ridership
BACT	Best Available Control Technology
BMP	Best Management Practices
BTU	British thermal units
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CBC	California Building Code
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDMG	California Department of Conservation, Division of Mines and Geology
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CHP	California Highway Patrol
CHRIS	California Historic Resources Information System
CIWMB	California Integrated Waste Management Board
CMA	Critical Movement Analysis
CMP	Congestion Management Plan
CNDDB	California Natural Diversity Database
CNEL	community equivalent noise level
CO	carbon monoxide
CRHR	California Register of Historic Resources
CSWMP	Comprehensive Stormwater Management Program
CWA	Clean Water Act
dB	decibels
dBA	A-weighted decibels
DHS	California Department of Health Services
DTSC	California Department of Toxic Substances Control
DU	Dwelling Unit
EH&S	Environmental Health and Safety
EIR	Environmental Impact Report
EPA	Environmental Protection Agency

Table 1-2 List of Abbreviations	
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FHWA-RD-77-108	Federal Highway Prediction Model
FIRM	Flood Insurance Rate Map
ft^3	cubic feet
gpd	gallons per day
gsf	gross square feet
HCM	Highway Capacity Manual
HI	Hazard Index
HOV	high occupancy vehicle
HRA	Health Risk Assessment
HUD	United States Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
IS	Initial Study
IWMD	Industrial Waste Management Division
kWh	kilowatt-hour
L_{eq}	equivalent energy noise level
LLRW	low-level radioactive waste
L_{max}	maximum instantaneous noise level
L_{min}	minimum instantaneous noise level
LOS	level of service
LRDP	Long Range Development Plan
LUST	leaking underground storage tanks
MCE	maximum credible earthquake
MEI	maximally exposed individual
MEP	maximum extent practicable
mgd	million gallons per day
MM	mitigation measure
mmBTU	one million British thermal units
MMRP	Mitigation Monitoring and Reporting Program
MOU	Memorandum of Understanding
MS4s	municipal separate storm sewer systems
MSDS	material safety data sheets
MTBE	methyl tertiary-butyl ether
Mw	moment magnitude
MWD	Metropolitan Water District
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historical Places

Table 1-2 List of Abbreviations	
NTSB	National Transportation Safety Board
OEHHA	Office of Environmental Health Hazard Assessment
Pb	lead
PCB	polychlorinated biphenyls
PM_{10}	particulate matter 10 microns in size or less in diameter
$PM_{2.5}$	particulate matter 2.5 microns in size or less in diameter
PPM	parts per million
PPs	Campus Programs and Practices
PRC	Public Resources Code
psi	pounds per square inch
RCPG	Regional Comprehensive Plan and Guide
RCRA	Resource Conservation Recovery Act
RMPP	Risk Management Prevention Plan
RSD	Radiation Safety Division
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCGC	Southern California Gas Company
SCH	State Clearinghouse
sf	square feet
SPH	Strategic Plan for Housing
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOx	sulfur oxides
SRA	source receptor area
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminants
TDM	Transportation Demand Management
TDS	total dissolved solids
TES	thermal energy storage system
UBC	Uniform Building Code
UC	University of California
UNEX	University Extension
URBEMIS	Urban Emissions Model
USACE	United States Army Corps of Engineers
USDHHS	Unites States Department of Health and Human Services
USDOT	United States Department of Transportation

Table 1-2 List of Abbreviations	
USFWS	United States Fish and Wildlife Service
UST	underground storage tanks
UWMP	Urban Water Management Plan
VdB	vibration decibels
VMT	vehicle miles traveled
VOC	volatile organic compounds
VPR	vehicles per hour
WDR	waste discharge requirements

Chapter 2 SUMMARY

2.1 PURPOSE OF THE SUMMARY

This summary is intended to describe major components of the environmental analysis for the UCR 2005 LRDP as required by Section 15123 of the California Environmental Quality Act (CEQA) Guidelines. The summary includes a brief description of the 2005 LRDP, the project objectives, community/agency issues, the purpose of the Mitigation Monitoring and Reporting Program, and alternatives to the 2005 LRDP. In addition, this chapter also provides a table summarizing (1) the potential environmental impacts that would occur as result of the 2005 LRDP; (2) Planning Strategies and existing Campus Programs and Practices; (3) the level of significance assuming implementation of the Planning Strategies and Programs and Practices; (4) feasible mitigation measures that would reduce significant environmental impacts; and (5) the level of significance after mitigation measures are implemented. A comparison of the proposed project to the project alternatives is also provided.

2.2 PROJECT DESCRIPTION

The University of California is directed by the Master Plan for Higher Education in California to provide instruction in the liberal arts and sciences, and for professional education in Law, Medicine, Veterinary Medicine, and Dentistry. It is also assigned exclusive responsibility for doctoral education in most disciplines, and is designated as the primary State-supported academic agency for research. Within this context, the mission of the University of California, Riverside (UCR) is to offer teaching, research, and public service programs of the highest quality to serve the needs of the Riverside region, the State of California, and the nation.

In accordance with the Master Plan for Higher Education, which guarantees access to the University of California for the top 12.5 percent of California's high school graduates, the University is now having to plan to increase enrollments to meet the anticipated demand for public higher education that will result from a projected increase in the number of high school graduates over the next decade. Accordingly, in January 2000, the President of the UC asked each campus to consider the feasibility of enrollment growth and UCR identified a planning target for the UCR campus of approximately 25,000[3] students by the year 2015/16.[4] Because this enrollment planning target would exceed the projection of 18,050 students provided in the current (1990) LRDP, the University has prepared the 2005 LRDP and this EIR in compliance with Section 21080.09 of the CEQA Guidelines to address the long-term and cumulative implications of that growth.

[3] Derived from 1 FTE = 1 Headcount. UCR uses a conversion rate of 1 FTE (0.95 rounded up) = 1 Headcount, and for the purposes of the LRDP, 1 FTE = 1 Headcount with the "student" taking full course loans every quarter with graduation in four years.
[4] The academic year 2015/16 would begin in the Fall of 2015 and end in the Spring of 2016.

The UCR 2005 Long Range Development Plan (LRDP) is the comprehensive land use plan that guides physical development of the campus in support of instruction, research, and public service mission. The 2005 LRDP identifies program goals to be achieved during the planning horizon, estimates the net new building space required to achieve these goals, articulates land use policies and environmental strategies to guide the physical development process, and suggests potential future uses of campus land. The LRDP is not a commitment to proceed with any specific project. The LRDP estimates the amount of new building space needed to meet academic and other program requirements. The 2005 LRDP EIR evaluates a development program of a total of 7.1 million gsf of new academic and support space, including housing, on campus as well as the potential impacts resulting from the projected increase in student enrollment and anticipated increases in the campus population. In addition to the development of new buildings and support facilities, existing on-campus facilities will continue to be subject to renovation, including seismic retrofit, expansion, maintenance, and infrastructure improvements during the time horizon of the UCR 2005 LRDP (to 2015/16). Current State and University of California budget constraints may reduce the number of students that UCR could accept. This could reduce the amount of space the campus could afford to build and this could affect the rate of growth. Nevertheless, this is a Long Range Development Plan. This plan and EIR need to evaluate the impacts of potential future growth over a long-term horizon.

2.3 PROJECT OBJECTIVES

UCR proposes to accommodate additional student enrollment and growth in academic programs, to achieve world leadership in selected academic areas, promote a culture of inquiry, foster diversity and excellence and embrace moral imperatives to hold resources in trust and engage the fundamental issues that face society as a whole. The UCR 2005 LRDP proposes to provide the highest quality teaching and research, professional preparation, and public service for the vital and diverse population served by the UCR campus. In order to achieve this, the 2005 LRDP includes academic, physical, and operational objectives that are fully set forth in Chapter 3.0 (Project Description) of this document.

2.4 COMMUNITY/AGENCY ISSUES

This EIR addresses issues that are known or were raised by agencies or interested parties during the NOP public review periods with respect to the environmental resources associated with the proposed project. These issues include the following:

- Loss of open space and landscaping
- Degradation of views
- Increased light and glare
- Loss of agricultural land in the West Campus
- Construction and operational air quality
- Impacts to sensitive species and habitats
- Consistency of the project with the Western Riverside County Multiple-Species Habitat Conservation Plan (MSHCP)

- Impacts to Native American sites
- Impacts to landforms
- Impacts resulting from hazardous sites or materials
- Increases in runoff resulting from campus development
- Impacts of construction in floodplain areas (the University Arroyo)
- The potential for alternative development schemes
- The compatibility of new campus uses with surrounding uses
- Noise resulting from campus development (construction and operation)
- Provision of adequate housing
- Adequacy of police protection
- The need for recreational opportunities on the campus
- Use of City parks by the campus population
- Traffic and parking
- Potential impacts to utilities service
- Consistency with specific policies of the Southern California Association of Government's Regional Comprehensive Plan and Guide (SCAG 1996)

2.5 MITIGATION MONITORING AND REPORTING PROGRAM

CEQA requires that a public agency adopt a Mitigation Monitoring and Reporting Program (MMRP) for mitigation measures that have been incorporated into the project to reduce or avoid significant effects on the environment. The MMRP is designed to ensure compliance during project implementation, as required by Public Resources Code Section 21081.6.

This EIR incorporates a range of Planning Strategies (PSs) identified in the UCR 2005 LRDP as guides for future development. In addition, existing Campus Programs and Practices (PPs) that currently reduce environmental impacts will be continued throughout the LRDP planning horizon. This EIR discusses feasible mitigation measures (MMs) that would be implemented to reduce significant environmental impacts. The MMRP for the 2005 LRDP includes PSs, MMs, and PPs, and if adopted would obligate the University to implement the Planning Strategies articulated in the UCR 2005 LRDP, continue to follow existing Programs and Practices, and implement the identified mitigation measures. The MMRP will be considered by The Regents in conjunction with consideration of the LRDP and certification of the Final EIR.

2.6 ALTERNATIVES

A number of potentially feasible alternatives that may be capable of attaining most of the basic project objectives while avoiding or substantially lessening some of the significant effects of the project were analyzed. These alternatives include the following:

- **Alternative 1: No Project (A): No New Development**. Under this alternative, the proposed LRDP would not be implemented. No additional buildings or facilities would be constructed (beyond previously approved projects). To the extent that existing facilities can accommodate additional students, some minor enrollment growth could occur.
- **Alternative 2: No Project (B): Continued Implementation of the 1990 LRDP**. The 2005 LRDP would not be pursued, and campus development and enrollment growth would continue to be guided by the existing 1990 LRDP. (This provides for a plan-to-plan comparison of the 1990 LRDP and the 2005 LRDP per Section 15126.6(e)(3)(A) of the CEQA Guidelines, and also serves as a reduced-project alternative.)
- **Alternative 3: New Development Concentrated on West Campus**. The UCR 2005 LRDP proposes to develop most academic and support space on the East Campus. This alternative would shift the majority of new academic and residential development (e.g., approximately 90 percent) to the West Campus, with only limited infill academic development on the East Campus.
- **Alternative 4: Off-Site Alternative**. This alternative would involve the development of new academic and support facilities at an off-campus location, the former March Air Force Base.
- **Alternative 5: Reduced On-Campus Housing**. The proposed UCR 2005 LRDP includes a goal to house 50 percent of student enrollment in on-campus or campus-controlled student housing. This alternative would reduce that goal to 35%.

A detailed description of these alternatives, as well as an analysis of related environmental effects, is presented in Chapter 6 (Alternatives) of this EIR.

2.7 ENVIRONMENTAL IMPACTS

Table 2-1 (Summary of Environmental Effects and Mitigation Measures), provided at the end of this section, presents a summary of the environmental impacts resulting from the proposed 2005 LRDP. It has been organized to correspond with the environmental issues discussed in Chapter 4 (Environmental Setting, Impacts, and Mitigation Measures) and is arranged in four columns: the identified impact under each EIR issue area; the level of significance prior to mitigation; 2005 LRDP EIR mitigation measures and/or existing Campus Programs and Practices that would avoid or reduce the level of impacts; and the level of significance after implementation of mitigation measures, if applicable. The Campus Programs and Practices are considered to be part of the 2005 LRDP for purposes of determining the level of significance prior to mitigation. These Programs and Practices are also enforceable in the same manner as the mitigation measures. Where no mitigation is required, it is noted in the table.

While the Campus has evaluated a range of potential mitigation measures to reduce significant project impacts, and will implement all feasible mitigation measures, construction and operation of the 2005 LRDP would result in the following significant and unavoidable impacts:

Agricultural Resources

- Operational impacts resulting from the conversion of approximately 125 acres of Prime Farmland to nonagricultural uses

Air Quality

- Construction impacts resulting from peak daily emissions of NOx
- Operational impacts resulting from peak daily emissions of VOC, NOx, and PM_{10}

Cultural Resources

- Potential demolition of historic or potentially historic structures

Noise

- Construction impacts resulting from groundborne vibration or groundborne noise levels
- Construction impacts resulting from an increase in on-campus ambient noise levels
- Construction impacts resulting from an increase in off-campus ambient noise levels

Traffic and Circulation

- Operational impacts resulting from an exceedance of the applicable LOS criteria for vehicle trips at up to 10 intersections during the A.M. and/or P.M. peak hour
- Construction 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

Although many project-related impacts resulting from implementation of the 2005 LRDP can be mitigated to a less-than-significant level, cumulative impacts would result from implementation of the 2005 LRDP in combination with the development of related projects in the area and projected regional growth. The impact areas for which there is a cumulatively considerable contribution of the 2005 LRDP to cumulative impacts are the following:

Agricultural Resources

- Conversion of approximately 125 acres of Prime Farmland into nonagricultural uses would result in a cumulatively considerable contribution to the regional trend of loss of farmland

Air Quality

- Construction and operational emissions would result in a cumulatively considerable increase of criteria pollutant emissions for which the South Coast Air Basin is in nonattainment

Biological Resources

- Project development would result in a cumulatively considerable loss of special status species and habitat

Traffic

- Areawide increases in population, employment, and housing would result in cumulatively considerable increases in traffic volumes on streets and highways in the project vicinity

All other physical environmental impacts (project-specific and cumulative) are either less than significant or can be mitigated to a less-than-significant level.

Table 6-5 (Comparison of Alternatives to the Proposed Project) provides a summary comparison of post-mitigation project impacts with those of each alternative, assuming that feasible mitigation measures are also implemented for each alternative. This table compares the level of significance for impacts resulting from each project alternative, by issue area, to the impacts of the 2005 LRDP.

Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
AESTHETICS					
4.1-1 Implementation of the 2005 LRDP would not have a substantial adverse effect on a scenic vista. With implementation of the relevant 2005 LRDP Planning Strategy and Program & Practice, this impact would be *less than significant.*	**PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.	**PP 4.1-1** The campus shall provide design architects with the 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).)*	LS	None required.	LS
4.1-2 Implementation of the 2005 LRDP would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be *less than significant.*	**PS Land Use 1** Achieve academic core densities of 1.0 FAR or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses. **PS Land Use 2** In order to achieve 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 Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve[1], to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.	**PP 4.1-1** The campus shall provide design architects with the 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 with the Campus Landscape Master Plan and instructions to develop project-specific landscape plans that are consistent with the Master Plan 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).)* **PP 4.1-2(b)** The campus shall continue to relocate, where feasible, mature "specimen" trees that would be removed as a result of construction activities on the campus. *(This is identical to Land Use PP 4.9-1(c).)* **PP 4.1-2(c)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provide wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Biological Resources PP 4.4-1(a) and Hydrology PP 4.8-3(a).)* **PP 4.1-2(d)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists. (ii) Removal of native shrub or brush shall be avoided, except where necessary.	LS	None required.	LS

[1] The 2005 LRDP defines five types of open space: a Natural Open Space Reserve (the southeast hills), Naturalistic Open Space (arroyos, Picnic Hill and the Botanic Gardens), Campus Landmark Open Spaces (including the Carillon Mall), Malls and Linear Open Spaces and Neighborhood Parks.

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	PS Open Space 6 Provide a new Campus Landmark Open Space on the West Campus, The Grove, to reflect the campus' citrus heritage and provide a gathering/activity space. **PS Open Space 7** Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees, whenever possible. **PS Conservation 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. **PS Conservation 4** Preserve historic buildings to the extent feasible. **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 Master Plan 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.	(iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages. (vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Biological Resources PP 4.4-1(b) and Hydrology 4.8-3(b).)*			
4.1-3 Development under the 2005 LRDP could create new sources of light or glare in the campus area or vicinity that would adversely affect day or nighttime views from adjacent land uses. With the implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would	**PS Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.	**PP 4.1-1** The campus shall provide design architects with the 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 with the Campus Landscape Master Plan and instructions to develop project-specific landscape plans that are consistent with the Master Plan	S	**MM 4.1-3(a)** Building materials shall be reviewed and approved as part of project-specific design and through approval of construction documents. Mirrored, reflective glass is prohibited on campus. **MM 4.1-3(b)** All outdoor lighting on campus resulting from new development shall be directed to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) to prevent stray light	LS

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
be reduced to a *less-than-significant* level.	**PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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. **PS 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. **PS Conservation 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. **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.	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).)* **PP 4.1-2(b)** The campus shall continue to relocate, where feasible, mature "specimen" trees that would be removed as a result of construction activities on the campus. *(This is identical to Land Use PP 4.9-1(c).)*		spillover onto adjacent residential areas. In addition, all fixtures on elevated light standards in parking lots, parking structures, and athletic fields shall be shielded to reduce glare. Lighting plans shall be reviewed and approved prior to project-specific design and construction document approval. **MM 4.1-3(c)** Ingress and egress from new parking areas shall be designed and situated so as to minimize the impact of vehicular headlights on adjacent uses. Walls, landscaping or other light barriers will be provided. Site plans shall be reviewed and approved as part of project-specific design and construction document approval.	
AGRICULTURAL RESOURCES					
4.2-1 Implementation of the 2005 LRDP would result in the conversion of approximately 125 acres of Prime Farmland to nonagricultural uses. Even with implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *significant and unavoidable*.	**PS Land Use 2** In order to achieve 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 Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.	None identified.	S	No feasible mitigation measures identified.	SU
4.2-2. Implementation of the 2005 LRDP would not conflict with existing zoning for agricultural use, or a Williamson Act contract. *No impact* would result.	N/A	N/A	NI	N/A	NI

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.2-3. Implementation of the 2005 LRDP would not involve other changes that could convert farmland to nonagricultural use. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant.*	**PS Land Use 2** In order to achieve 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 Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.	None identified.	LS	None required.	LS
AIR QUALITY					
4.3-1. Implementation of the 2005 LRDP would not conflict with or obstruct implementation of the Air Quality Management Plan for the South Coast Air Basin. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, 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. **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 **PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	**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.)*	LS	None required.	LS

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.3-2. The 2005 LRDP construction activities would result in the generation of criteria pollutants, which could contribute substantially to an existing or projected air quality violation. Even with implementation of the relevant Programs and Practices and Mitigation Measure, this impact would be *significant and unavoidable*.	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 **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 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 (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 *(This is identical to Geology PP 4.6-2(a) and Hydrology PP 4.8-3(c).)* **PP 4.3-2(c)** The campus shall continue to implement SCAQMD Rule 1403—Asbestos when demolishing existing buildings on the campus.	S	**MM 4.3-2** Programs and Practices 4.3-2(a), (b), and (c), or their equivalent, shall be included in construction contract specifications. The contract specifications shall require the use of low NOx diesel fuel and construction equipment to the extent that it is readily available at the time of development.	SU

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.3-3. Implementation of the 2005 LRDP would generate a net increase in daily operational campus emissions, which could contribute substantially to an existing or projected air quality exceedance. Even with implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measure, this impact would be *significant and unavoidable*.	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	**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.)* **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 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 (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	S	**MM 4.3-2** Programs and Practices 4.3-2(a), (b), and (c), or their equivalent, shall be included in construction contract specifications. The contract specifications shall require the use of low NOx diesel fuel and construction equipment to the extent that it is readily available at the time of development. **MM 4.3-3** To reduce energy consumption and areawide emission of criteria pollutants, the campus shall annually inspect and enforce an emissions reduction control strategy, which may include, where feasible, the following: <u>Design</u> ■ Use light-colored roof materials to reduce heat gain ■ Orient buildings to the north and include passive solar design features ■ Increase building and attic insulation beyond Title 24 requirements ■ Provide electric vehicle charging systems at convenient location in campus parking facilities ■ Provide prominent website and/or kiosks displaying information about alternative transportation programs ■ Install electrical outlets outside buildings for the use of electric landscape maintenance equipment <u>Operation</u> ■ 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 station(s) ■ 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	SU

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	2004 LRDP Planning Strategies	Existing Campus Programs and Practices	Level of Significance (prior to Mitigation)	Mitigation Measures	Level of Significance (with Mitigation)
		areas or unpaved road surfaces (x) Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads *(This is identical to Geology PP 4.6-2(a) and Hydrology PP 4.8-3(c).)* **PP 4.3-2(c)** The campus shall continue to implement SCAQMD Rule 1403—Asbestos when demolishing existing buildings on the campus.			
4.3-4. Even with implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, implementation of the 2005 LRDP would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal or State ambient air quality standard. This is considered a *significant and unavoidable impact.*	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.)* **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 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	S	**MM 4.3-2** Programs and Practices 4.3-2(a), (b), and (c), or their equivalent, shall be included in construction contract specifications. The contract specifications shall require the use of low NOx diesel fuel and construction equipment to the extent that it is readily available at the time of development. **MM 4.3-3** To reduce energy consumption and areawide emission of criteria pollutants, the campus shall annually inspect and enforce an emissions reduction control strategy, which may include, where feasible, the following: <u>Design</u> ■ Use light-colored roof materials to reduce heat gain ■ Orient buildings to the north and include passive solar design features ■ Increase building and attic insulation beyond Title 24 requirements ■ Provide electric vehicle charging systems at convenient location in campus parking facilities ■ Provide prominent website and/or kiosks displaying information about alternative transportation programs ■ Install electrical outlets outside buildings for the use of electric landscape maintenance equipment <u>Operation</u> ■ 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 station(s) ■ 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	SU

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		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 *(This is identical to Geology PP 4.6-2(a) and Hydrology PP 4.8-3(c).)* **PP 4.3-2(c)** The campus shall continue to implement SCAQMD Rule 1403—Asbestos when demolishing existing buildings on the campus.		staff and distribute information to students and visitors about air pollution problems and solutions	
4.3-5. Implementation of the 2005 LRDP would not expose sensitive receptors to substantial pollutant concentrations. This is considered a *less-than-significant* impact.	None identified.	None identified.	LS	None required.	LS
4.3-6. 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. This is considered a *less-than-significant* impact.	None identified.	None identified.	LS	None required.	LS
4.3-7. Implementation of the 2005 LRDP would not create objectionable odors affecting a substantial number of people. This is considered a *less-than-significant* impact.	None identified.	None identified.	LS	None required.	LS
BIOLOGICAL RESOURCES					
4.4-1. Development allowed under the 2005 LRDP could result in adverse impacts to candidate, sensitive, or special status plant and wildlife species. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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	**PP 4.4-1(a)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Aesthetics PP 4.1-2(c) and Hydrology PP 4.8-3(a).)* **PP 4.4-1(b)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists.	S	**MM 4.4-1(a)** To ensure that potential impacts to special status plant and wildlife species that are known to occur within the Natural and Naturalistic areas of the campus or have a moderate or greater potential to occur (refer to Tables 4.4-1 and 4.4-2) are reduced to less than significant levels, the campus shall conduct surveys for special-status species prior to disturbance of areas or habitat that are known to support the species. The University shall conduct surveys of the area(s) in accordance with applicable protocols or guidelines developed by the CDFG and/or USFWS, as applicable. **MM 4.4-1(b)** If surveys determine that special-status plant or animal species are present, the following measures shall be implemented: (i) Vegetation: If sensitive plant species or habitats are observed and would be impacted by project-related activities, a qualified botanist shall develop a species or habitats-specific replacement plan. This plan shall include elements to limit project	LS

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	freeway. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Conservation 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.	(ii) Removal of native shrub or brush shall be avoided, except where necessary. (iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages. (vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Aesthetics PP 4.1-2(d) and Hydrology 4.8-3(b).)*		impacts such as the relocation of individual specimens, the collection of seeds and replanting, or the preservation and movement of topsoil that contains the seed bank. If replacement within the project area is not feasible, then an approved mitigation bank shall be used. For either case, on-site or off-site revegetation, a mitigation monitoring plan shall be prepared and approved by the CDFG prior to start of construction. (ii) Wildlife: If special status wildlife is found within areas of proposed construction and avoidance is not feasible, the campus will consult with the appropriate agencies, obtain any necessary State or federal permits, and prepare a mitigation plan for those special-status species that would be impacted. The mitigation plan would be subject to the approval of applicable State and/or federal agencies, and may include measures such as the relocation of the affected species, protection of other on-campus habitat where the plant or animal is known to occur, or site preparation and revegetation to create suitable habitat.	
4.4-2. Development allowed under the 2004 LRDP could result in development within the designated critical habitat area for the California gnatcatcher, or could result in the loss or modification of drainage channels that provide riparian habitat, which could result in substantial adverse effects to gnatcatcher or riparian habitat. With implementation of the relevant 2004 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever possible existing landforms, native plant materials and trees. Where appropriate, restore habitat value. **PS 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.	**PP 4.4-1(a)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Aesthetics PP 4.1-2(c) and Hydrology PP 4.8-3(a).)* **PP 4.4-1(b)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists. (ii) Removal of native shrub or brush shall be avoided, except where necessary. (iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages.	S	**MM 4.4-1(a)** To ensure that potential impacts to special status plant and wildlife species that are known to occur within the Natural and Naturalistic areas of the campus or have a moderate or greater potential to occur (refer to Tables 4.4-1 and 4.4-2) are reduced to less than significant levels, the campus shall conduct surveys for special-status species prior to disturbance of areas or habitat that are known to support the species. The University shall conduct surveys of the area(s) in accordance with applicable protocols or guidelines developed by the CDFG and/or USFWS, as applicable. **MM 4.4-1(b)** If surveys determine that special-status plant or animal species are present, the following measures shall be implemented: (i) Vegetation: If sensitive plant species or habitats are observed and would be impacted by project-related activities, a qualified botanist shall develop a species or habitats-specific replacement plan. This plan shall include elements to limit project impacts such as the relocation of individual specimens, the collection of seeds and replanting, or the preservation and movement of topsoil that contains the seed bank. If replacement within the project area is not feasible, then an approved mitigation bank shall be used. For either case, on-site or off-site revegetation, a mitigation monitoring plan shall be prepared and approved by the CDFG prior to start of construction.	LS

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		(vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Aesthetics PP 4.1-2(d) and Hydrology 4.8-3(b).)* **PP 4.4-2(a)** Impacts to riparian and wetland habitats shall be avoided, wherever feasible. If avoidance is not feasible, then the impacts will be evaluated as part of the Clean Water Act section 404 and California Fish and Game Code section 1602 permit application process. If mitigation is required, the University of California will develop and implement a resource mitigation program to be reviewed and approved by the ACOE and CDFG through the state and federal permit process. The permit shall mitigate the habitats such that they are consistent with the Clean Water Act and CDFG policy of "no net loss" of wetland. Furthermore, impacted wetlands and/or riparian vegetation that cannot be avoided would be replaced at a ratio approved by the ACOE and CDFG. If replacement within the area is not feasible, then an approved mitigation bank or other off-site area will be used. The revegetation of impacted areas or mitigation parcels will be performed by a qualified restoration specialist and shall be conducted only on sites where soils, hydrology, and microclimate conditions are suitable for riparian habitat. First priority will be given to areas that are adjacent to existing patches of native habitat. **PP 4.4-2(b)** In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003): (i) Public education and outreach on stormwater impacts (ii) Public involvement/participation (iii) Illicit discharge detection and elimination (iv) Pollution prevention/good housekeeping for facilities (v) Construction site stormwater runoff control (vi) Post-construction stormwater management in new development and redevelopment *(This is identical to Geology and Soils PP 4.6-2(b) and Hydrology PP 4.8-3(d).)*		(ii) Wildlife: If special status wildlife is found within areas of proposed construction and avoidance is not feasible, the campus will consult with the appropriate agencies, obtain any necessary State or federal permits, and prepare a mitigation plan for those special-status species that would be impacted. The mitigation plan would be subject to the approval of applicable State and/or federal agencies, and may include measures such as the relocation of the affected species, protection of other on-campus habitat where the plant or animal is known to occur, or site preparation and revegetation to create suitable habitat.	
4.4-3. Development allowed under the 2005 LRDP could result in a substantial adverse effect on federally protected wetlands through direct removal, filling, or hydrological interruption. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever possible existing landforms, native plant materials and trees. Where appropriate, restore habitat value. **PS 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. **PS Conservation 2** Site buildings and plan site	**PP 4.4-1(a)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Aesthetics PP 4.1-2(c) and Hydrology PP 4.8-3(a).)*	S	**MM 4.4-3(a)** When habitat that could be regulated by the Clean Water Act (Section 404) would be impacted, either directly or indirectly, the University shall perform a jurisdictional and/or wetland delineation to assess the extent of the jurisdictional area(s). **MM 4.4-3(b)** If wetland or riparian habitat would be removed as a result of project development, the University shall restore or enhance wetland or riparian habitat as required by the applicable State and/or federal resource agencies. **MM 4.4-3(c)** Any proposal for wetland creation or enhancement (pursuant to MM 4.4-3(b) above) will be based upon the completion of soils, hydrologic and other studies confirming the feasibility of the creation	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.	**PP 4.4-1(b)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists. (ii) Removal of native shrub or brush shall be avoided, except where necessary. (iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages. (vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Aesthetics PP 4.1-2(d) and Hydrology 4.8-3(b).)* **PP 4.4-2(a)** Impacts to riparian and wetland habitats shall be avoided, wherever feasible. If avoidance is not feasible, then the impacts will be evaluated as part of the Clean Water Act section 404 and California Fish and Game Code section 1602 permit application process. If mitigation is required, the University of California will develop and implement a resource mitigation program to be reviewed and approved by the ACOE and CDFG through the state and federal permit process. The permit shall mitigate the habitats such that they are consistent with the Clean Water Act and CDFG policy of "no net loss" of wetland. Furthermore, impacted wetlands and/or riparian vegetation that cannot be avoided would be replaced at a ratio approved by the ACOE and CDFG. If replacement within the area is not feasible, then an approved mitigation bank or other off-site area will be used. The revegetation of impacted areas or mitigation parcels will be performed by a qualified restoration specialist and shall be conducted only on sites where soils, hydrology, and microclimate conditions are suitable for riparian habitat. First priority will be given to areas that are adjacent to existing patches of native habitat. **PP 4.4-2(b)** In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003): (i) Public education and outreach on stormwater impacts (ii) Public involvement/participation (iii) Illicit discharge detection and elimination (iv) Pollution prevention/good housekeeping for facilities (v) Construction site stormwater runoff control (vi) Post-construction stormwater management in new development and redevelopment *(This is identical to Geology and Soils PP 4.6-2(b) and Hydrology PP 4.8-3(d).)*		or enhancement proposal and shall include United States Army Corps of Engineers (USACE)–approved measures intended to promote occupancy by special status and other wetland-dependent species (e.g., plantings, collection of topsoil and inoculation of target areas).	

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.4-4. Development under the 2005 LRDP could interfere with the movement of native resident or migratory wildlife species or corridors. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever possible existing landforms, native plant materials and trees. Where appropriate, restore habitat value. **PS Open Space 5** Retain the Carillon Mall as a major Campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.	**PP 4.4-1(a)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Aesthetics PP 4.1-2(c) and Hydrology PP 4.8-3(a).)* **PP 4.4-1(b)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists. (ii) Removal of native shrub or brush shall be avoided, except where necessary. (iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages. (vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Aesthetics PP 4.1-2(d) and Hydrology 4.8-3(b).)*	S	**MM 4.4-4(a)** Prior to the onset of construction activities that would result in the removal of mature trees and would occur between March and mid-August, surveys for nesting special status avian species and raptors shall be conducted on the affected portion of the campus following USFWS and/or CDFG guidelines. If no active avian nests are identified on or within 250 feet of the construction site, no further mitigation is necessary. **MM 4.4-4(b)** If active nests for avian species of concern or raptor nests are found within the construction footprint or a 250-foot buffer zone, exterior construction activities shall be delayed within the construction footprint and buffer zone until the young have fledged or appropriate mitigation measures responding to the specific situation have been developed and implemented in consultation with USFWS and CDFG.	LS
4.4-5. Development under the 2005 LRDP would be in substantial conformance with local applicable policies protecting biological resources. With implementation of relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*.	**PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where	None identified.	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	appropriate, restore habitat value.In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever possible existing landforms, native plant materials and trees. Where appropriate, restore habitat value. **PS 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.				
4.4-6. Implementation of the 2005 LRDP would not conflict with an adopted habitat conservation plan or natural community conservation plan. *No impact* would result.	N/A	N/A	NI	N/A	NI
CULTURAL RESOURCES					
4.5-1 Implementation of the 2005 LRDP could result in the modification of structures that have been designated as eligible or potentially eligible to the NRHP or CRHR. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Conservation 4** Preserve historic buildings to the extent feasible.	None identified.	S	**MM 4.5-1(a)** Before altering or otherwise affecting a building or structure 50 years old or older, the campus shall retain a qualified architectural historian to evaluate the potential significance of the building, using the significance criteria set forth for historic resources under CEQA Guidelines Section 15064.5. The evaluation process shall include the development of appropriate historical background research as context for the assessment of the significance of the structure in the history of the University system, the campus, and the region. For historic buildings, structures, or features that do not meet the CEQA criteria for historical resource, no further mitigation is required and the impact is less than significant. **MM 4.5-1(b)** The University shall follow the Secretary of the Interior's Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Weeks and Grimmer 1995) or the State Historical Building Code, as appropriate when making modifications to historic structures eligible for NRHP or CRHR listing.	LS
4.5-2. Implementation of the 2005 LRDP could result in the demolition of historic or potentially historic structures. With implementation of relevant 2005 LRDP Planning Strategies, Program and Practice, and Mitigation Measures, this impact could remain *significant and unavoidable*.	**PS Conservation 4** Preserve historic buildings to the extent feasible. **PS Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.	**PP 4.5-2** If any project is proposed that would require or result in the relocation or demolition of a historic structure, the campus shall prepare a project-specific CEQA analysis, pursuant to Section 15064.5 et seq. of the CEQA Guidelines.	S	**MM 4.5-1(a)** Before altering or otherwise affecting a building or structure 50 years old or older, the campus shall retain a qualified architectural historian to evaluate the potential significance of the building, using the significance criteria set forth for historic resources under CEQA Guidelines Section 15064.5. The evaluation process shall include the development of appropriate historical background research as context for the assessment of the significance of the structure in the history of the University system, the campus, and the region. For historic buildings, structures, or features that do not meet the CEQA	SU

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				criteria for historical resource, no further mitigation is required and the impact is less than significant. **MM 4.5-2(a)** For any proposal to demolish a structure or building that has been determined by a qualified architectural historian to qualify as an historical resource and where it has been determined that avoidance is not feasible, documentation and treatment shall be carried out as described below: (i) If preservation and reuse at the site are not feasible, the historical building shall be documented as described in item (ii) and, when physically and financially feasible, be moved and preserved or reused. (ii) If a significant historic building or structure is proposed to be demolished, the campus shall ensure that a qualified architectural historian thoroughly documents the building and associated landscaping and setting. Documentation shall include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey (HABS) or Historic American Engineering Record (HAER), including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available. A copy of the record shall be deposited with the University archives, Rivera Library Special Collections. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site specific and comparative archival research, and oral history collection as appropriate.	
4.5-3. Construction activities associated with implementation of the 2005 LRDP could result in damage to or the destruction of previously unknown archaeological resources. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.	**PS Land Use 2** In order to achieve 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 Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and	**PP 4.5-3** If construction would occur within the southeast hills or within the portion of the West Campus north of Martin Luther King Boulevard, a surface field survey shall be conducted in conjunction with a project specific environmental analysis in accordance with CEQA. Depending on the results of the survey, the following measures shall be implemented: (i) If no evidence of surface archaeological resources is discovered, or if development would occur in areas not designated as sensitive for archaeological resources: › Prior to site preparation or grading activities, construction personnel shall be informed of the potential for encountering unique archaeological resources and taught how to identify these resources if encountered. This shall include the provision of written materials to familiarize personnel with the range of resources that might be expected, the type of activities that may result in impacts, and the legal framework of cultural resources protection. Construction specifications shall require that all construction personnel shall be instructed to stop work in the	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Conservation 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.	vicinity of a potential discovery until a qualified, non-University archaeologist assesses the significance of the find and implements appropriate measures to protect or scientifically remove the find. Construction personnel shall also be informed that unauthorized collection of archaeological resources is prohibited. › The campus shall require the site project contractor to report any evidence of archaeological resources unearthed during development excavation to the campus. › The archaeologist shall then be present during the grading and shall have the authority to halt disturbance of any archaeological resources long enough to assess the situation, conduct testing, and implement mitigation measures that would reduce impacts in accordance with Section 21083.2 of CEQA. (ii) If any evidence of archaeological materials is discovered on the surface during field survey, then: › A qualified archaeologist shall prepare a recovery plan for the resources. › An archaeologist shall also be present during grading and shall have the authority to halt disturbance of any archaeological resources long enough to assess the situation, conduct testing, and implement mitigation measures that would reduce impacts in accordance with Section 21083.2 of CEQA.			
4.5-4. Construction activities associated with implementation of the 2005 LRDP could result in damage to or the destruction of previously unknown paleontological resources. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.	**PS Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.	**PP 4.5-4** Construction specifications shall require that if a paleontological resource is uncovered during construction activities: (i) A qualified paleontologist shall determine the significance of the find. (ii) The campus shall make an effort to preserve the find intact through feasible project design measures. (iii) If it cannot be preserved intact, then the University shall retain a qualified non-University paleontologist to design and implement a treatment plan to document and evaluate the data and/or preserve appropriate scientific samples. (iv) The paleontologist shall prepare a report of the results of the study, following accepted professional practice. (v) Copies of the report shall be submitted to the University and the Riverside County Museum.	S		LS

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.5-5. Construction activities associated with implementation of the 2005 LRDP could result in the disturbance of human remains. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant.*	**PS Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.	**PP 4.5-5** In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected and the University immediately shall notify the Riverside County Coroner of the find and comply with the provisions of P.R.C. Section 5097 with respect to Native American involvement, burial treatment, and re-burial, if necessary.	LS	None required.	LS
Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
GEOLOGY AND SOILS					
4.6-1. Implementation of the 2005 LRDP could expose people and/or structures to potentially substantial adverse effects resulting from seismic ground shaking. With implementation of the relevant Programs and Practices, this impact would be *less than significant.*	None identified.	**PP 4.6-1(a)** During project-specific building design, a site-specific geotechnical study shall be conducted under the direct supervision of a California Registered Engineering Geologist or licensed geotechnical engineer to assess seismic, geological, soil, and groundwater conditions at each construction site and develop recommendations to prevent or abate any identified hazards. The study shall follow applicable recommendations of CDMG Special Publication 117 and shall include, but not necessarily be limited to ■ Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site ■ Potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints ■ Evaluation of depth to groundwater The structural engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations **PP 4.6-1(b)** The campus shall continue to implement its current seismic	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		upgrade program. **PP 4.6-1(c)** The campus will continue to fully comply with the University of California's Policy for Seismic Safety, as amended. The intent of this policy is to ensure that the design and construction of new buildings and other facilities shall, as a minimum, comply with seismic provisions of California Code of Regulations, Title 24, California Administrative Code, the California State Building Code, or local seismic requirements, whichever requirements are most stringent.			
4.6-2. Excavation of soils in association with 2005 LRDP development could result in substantial soil erosion and the loss of topsoil. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.	**PS Land Use 2** In order to achieve 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 Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce	**PP 4.6-2(a)** 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 nontoxic 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 are to be covered or should 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 (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 *(This is identical to Air Quality PP 4.3-2(b) and Hydrology PP 4.8-3(c).)* **PP 4.6-2(b)** In compliance with National Pollution Discharge Elimination System (NPDES), the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Conservation 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.	Management Plan (UCR 2003): (i) Public education and outreach on stormwater impacts (ii) Public involvement/participation (iii) Illicit discharge detection and elimination (iv) Pollution prevention/good housekeeping for facilities (v) Construction site stormwater runoff control (vi) Post-construction stormwater management in new development and redevelopment *(This is identical to Biological Resources PP 4.4-2(b) and Hydrology PP 4.8-3(d).)*			
4.6-3. Construction in areas underlain by soils of varying stability could subject people and structures to hazards associated with landsliding, lateral spreading, subsidence, liquefaction, collapse, or differential settlement. With implementation of relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant.*	**PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration.	**PP 4.6-1(a)** During project-specific building design, a site-specific geotechnical study shall be conducted under the direct supervision of a California Registered Engineering Geologist or licensed geotechnical engineer to assess seismic, geological, soil, and groundwater conditions at each construction site and develop recommendations to prevent or abate any identified hazards. The study shall follow applicable recommendations of CDMG Special Publication 117 and shall include, but not necessarily be limited to ■ Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site ■ Potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints ■ Evaluation of depth to groundwater The structural engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations	LS	None required.	LS
4.6-4. Implementation of the 2005 LRDP could result in construction of facilities on expansive soils, creating substantial risk to people and structures. With implementation of the relevant Program and Practice, this impact would be *less than significant.*	None identified.	**PP 4.6-1(a)** During project-specific building design, a site-specific geotechnical study shall be conducted under the direct supervision of a California Registered Engineering Geologist or licensed geotechnical engineer to assess seismic, geological, soil, and groundwater conditions at each construction site and develop recommendations to prevent or abate any identified hazards. The study shall follow applicable recommendations of CDMG Special Publication 117 and shall include, but not necessarily be limited to ■ Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site ■ Potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints ■ Evaluation of depth to groundwater The structural engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
HAZARDS AND HAZARDOUS MATERIALS					
4.7-1. Implementation of the 2005 LRDP 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). With implementation of the relevant Program and Practice, this 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.	LS	None required.	LS
4.7-2. Implementation of the 2005 LRDP could expose construction workers and campus occupants to significant health or safety risks through renovation or demolition of buildings, or relocation of underground utilities that contain hazardous materials. With implementation of the relevant Programs and Practices, this 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. **PP 4.7-2** The campus shall perform hazardous materials surveys on buildings and soils, if applicable, prior to demolition. When remediation is deemed necessary, surveys shall identify all potential hazardous materials within the structure to be demolished, and identify handling and disposal practices. The campus shall follow the practices during building demolition to ensure construction worker and public safety.	LS	None required.	LS
4.7-3. Implementation of the 2005 LRDP would increase the amount of hazardous materials used on and transported to and from the campus, which could expose people to potential health risks in the event of an accident or accidental release. With implementation of the relevant Programs and Practices, this 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. **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	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		available.			
4.7-4. Implementation of the 2005 LRDP could create a risk of exposure of construction workers and campus occupants to contaminated soil or groundwater. With implementation of the relevant Programs and Practices and Mitigation Measure, this potentially significant impact would be reduced to a *less-than-significant* level.	None identified.	**PP 4.7-4** Prior to demolition of structures on the campus or new construction on former agricultural teaching and research fields, the campus shall complete a Phase I environmental site assessment to determine the potential for soil or groundwater contamination on a project site. If the assessment determines that a substantial potential exists on the site, the campus shall develop and implement an appropriate testing and, if needed, develop a remediation strategy prior to demolition or construction activities. If contaminated soil and/or groundwater is encountered during the removal of on-site debris or during excavation and/or grading activities (i) The construction contractor(s) shall stop work and immediately inform EH&S. (ii) An on-site assessment shall be conducted to determine if the discovered materials pose a significant risk to the public or construction workers. (iii) If the materials are determined to pose such a risk, a remediation plan shall be prepared and submitted to EH&S to comply with all federal and State regulations necessary to clean and/or remove the contaminated soil and/or groundwater. (iv) Soil remediation methods could include, but are not necessarily limited to, excavation and on-site treatment, excavation and off-site treatment or disposal, and/or treatment without excavation. (v) Remediation alternatives for cleanup of contaminated groundwater could include, but are not necessarily limited to, on-site treatment, extraction and off-site treatment, and/or disposal. (vi) The construction schedule shall be modified or delayed to ensure that construction will not inhibit remediation activities and will not expose the public or construction workers to significant risks associated with hazardous conditions. **PP 4.8-1** The campus will continue to comply with all applicable water quality requirements established by the SARWQCB. *(This is identical to Utilities PP 4.15-5.)*	S	**MM 4.7-4** Prior to development on former agricultural lands, appropriate soil testing shall be performed to determine whether chemical residue is present from prior activities in amounts that would pose health hazards to construction workers and/or occupants of new buildings. If contamination is determined to be present, PP 4.7-4 shall be implemented.	LS
4.7-5. Implementation of the 2005 LRDP could result in hazardous emissions or require the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. With implementation of the relevant Program and Practice, this 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.	LS	None required.	LS

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4.7-6. Implementation of the 2005 LRDP would not result in construction on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. This impact would be *less than significant.*	None identified.	None identified.	LS	None required.	LS
4.7-7. Implementation of the 2005 LRDP could impair implementation of, or physically interfere with, an adopted emergency response or emergency evacuation plan. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Land Use 3** Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard. **PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **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. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS Open Space 6** Provide a new campus Landmark Open Space on the West Campus, The Grove, to reflect campus citrus heritage and as a gathering/activity space. **PS Open Space 7** Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space. **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.	**PP 4.7-7(a)** 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 appropriate signage indicating alternative routes. *(This is identical to Transportation and Traffic PP 4.14-5.)* **PP 4.7-7(b)** To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Design and Construction shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes. *(This is identical to Transportation and Traffic PP 4.14-8.)*	S	**MM 4.7-7(a)** Evacuation zones designated in the UCR Emergency Operations Plan will be avoided, to the extent feasible, when siting construction staging areas. Where evacuation zones cannot be avoided, alternative evacuation zones shall be identified. UCPD and the Riverside Fire Department shall be notified of alternative evacuation zones so that they can respond accordingly to any emergencies. **MM 4.7-7(b)** The campus Emergency Operations Plan shall be reviewed on an annual basis and updated as appropriate to account for new on-campus development, which may require changes to the plan, such as revised locations for Campus Evacuation Zones.	LS

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4.7-8 Development of facilities in the southeastern portion of the campus (adjacent to the southeastern hills) could expose people or structures to a risk of loss, injury, or death involving wildland fires. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.	None identified.	S	**MM 4.7-8(a)** Provide landscaping around development areas adjacent to preserved open space that emphasizes native or traditional plant material where appropriate and provides a transition to developed areas in a manner that minimizes dense vegetation immediately adjacent to structural development. Landscaping shall be shown on building plans, and plans shall be reviewed and approved for conformance with this measure prior to project design approval and project-specific construction documents. **MM 4.7-8(b)** Implement annual fuel management procedures to maintain a firebreak between the undeveloped areas and structures.	LS
HYDROLOGY AND WATER QUALITY					
4.8-1 Implementation of the 2005 LRDP would not violate existing water quality standards or waste discharge requirements. With implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, this impact would be *less than significant*.	**PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible	**PP 4.8-1** The campus will continue to comply with all applicable water quality requirements established by the SARWQCB. *(This is identical to Utilities PP 4.15-5.)*	LS	None required.	LS
4.8-2. Implementation of the 2005 LRDP would not substantially deplete groundwater supplies or interfere with groundwater recharge. With implementation of the relevant LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	**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 over time (v) Prohibit using water as a means of cleaning impervious surfaces (vi) Install water-efficient irrigation equipment to local evaporation rates 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).)*	LS	None required.	LS
4.8-3. Implementation of the 2005 LRDP would not substantially alter drainage patterns on campus and would not result	**PS Land Use 2** In order to achieve densities of 1.0 FAR, infill sites in the partially developed East Campus academic core, and expand to the West	**PP 4.8-3(a)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve,	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
in substantial erosion or siltation on or off site. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant.*	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 Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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. **PS Open Space 5** Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Conservation 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.	conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to Natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Biological Resources PP 4.4-1(a) and Aesthetics PP 4.1-2(c).)* **PP 4.8-3(b)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists. (ii) Removal of native shrub or brush shall be avoided, except where necessary. (iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages. (vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Aesthetics PP 4.1-2(d) and Biological Resources PP 4.4-1(b).)* **PP 4.8-3(c)** 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 nontoxic 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			

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with 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 are to be covered or should 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 (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 *(This is identical to Air Quality PP 4.3-2(b) and Geology PP 4.6-2(a).)* **PP 4.8-3(d)** In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003): (i) Public education and outreach on stormwater impacts (ii) Public involvement/participation (iii) Illicit discharge detection and elimination (iv) Pollution prevention/good housekeeping for facilities (v) Construction site stormwater runoff control (vi) Post-construction stormwater management in new development and redevelopment **PP 4.8-3(e)** Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding: (i) Multi-project stormwater detention basins (ii) Single-project detention basins (iii) Surface detention design (iv) Expansion or modification of the existing storm drain system (v) Installation of necessary outlet control facilities			

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.8-4. Implementation of the 2005 LRDP would not substantially alter site drainage patterns or substantially increase the rate or amount of surface runoff and would not result in flooding either on or off site. With implementation of the relevant Program and Practice, this impact would be reduced to a *less-than-significant* level.	None identified.	**PP 4.8-3(e)** Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding: ■ Multi-project stormwater detention basins ■ Single-project detention basins ■ Surface detention design ■ Expansion or modification of the existing storm drain system ■ Installation of necessary outlet control facilities	LS	None required.	LS
4.8-5. Implementation of the 2005 LRDP would not create runoff that would exceed the capacity of existing storm drain systems or provide substantial sources of polluted runoff. With implementation of the relevant Programs and Practices, this impact would be *less than significant.*	None identified.	**PP 4.8-3(c)** 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 nontoxic 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 are to be covered or should 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 (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 *(This is identical to Air Quality PP 4.3-2(b) and Geology PP 4.6-2(a).)*	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		PP 4.8-3(d) In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003): (i) Public education and outreach on stormwater impacts (ii) Public involvement/participation (iii) Illicit discharge detection and elimination (iv) Pollution prevention/good housekeeping for facilities (v) Construction site stormwater runoff control (vi) Post-construction stormwater management in new development and redevelopment *(This is identical to Biological Resources PP 4.4-2(b) and Geology and Soils PP 4.6-2(b).)* **PP 4.8-3(e)** Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding: ■ Multi-project stormwater detention basins ■ Single-project detention basins ■ Surface detention design ■ Expansion or modification of the existing storm drain system ■ Installation of necessary outlet control facilities			
4.8-6. Implementation of the 2005 LRDP would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. This impact would be *less than significant*.	None identified.	None identified.	LS	None required.	LS
4.8-7. Implementation of the 2005 LRDP would not otherwise substantially degrade water quality. This impact would be *less than significant*.	None identified.	None identified.	LS	None required.	LS
4.8-8. Implementation of the 2005 LRDP would not place housing within a 100-year flood hazard area. *No impact* would result.	None identified.	None identified.	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.8-9. Implementation of the 2005 LRDP would not place structures within a 100-year flood hazard area and development could not impede or redirect flood flows. With implementation of the relevant Program and Practice and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	None identified.	**PP 4.8-3(e)** Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding: ■ Multi-project stormwater detention basins ■ Single-project detention basins ■ Surface detention design ■ Expansion or modification of the existing storm drain system ■ Installation of necessary outlet control facilities	S	**MM 4.8-9(a)** Prior to design approval, the campus will review the plans for all structures to be constructed in the 100-year floodplain for compliance with the following FEMA requirements for nonresidential structures: (i) Elevate the lowest floor (including the basement) to or above the base flood level; or (ii) Together with attendant utility and sanitary facilities, design so that below the base flood level, the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and (iii) Require that fully enclosed areas below the lowest floor that are subject to flooding be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for entry and exit of flood waters. **MM 4.8-9(b)** For structures placed within the 100-year floodplain, flood control devices will be designed to direct flows toward areas where flood hazards will be minimal.	LS
4.8-10. Implementation of the 2005 LRDP would alter site drainage patterns but would not expose people or structures to significant risk of loss, injury, or death involving flooding. With implementation of the relevant Program and Practice, this impact would be *less than significant.*	None identified.	**PP 4.8-10** In the event of an emergency, including catastrophic failure of the California State Water Project pipeline, the campus would implement the Emergency Operations Plan.	LS	None required.	LS
4.8-11. Implementation of the 2005 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant.*	**PS Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS 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.	**PP 4.8-3(a)** To reduce impacts to the Natural Open Space Reserve area: (i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access. (ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to Natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas. *(This is identical to Biological Resources PP 4.4-1(a) and Aesthetics PP 4.1-2(c).)* **PP 4.8-3(b)** To reduce disturbance of Natural and Naturalistic Open Space areas: (i) Unnecessary driving in sensitive or otherwise undisturbed areas	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		shall be avoided. New roads or construction access roads would not be created where adequate access already exists. (ii) Removal of native shrub or brush shall be avoided, except where necessary. (iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access. (iv) Excess fill or construction waste shall not be dumped in washes. (v) Vehicles or other equipment shall not be parked in washes or other drainages. (vi) Overwatering shall be avoided in washes and other drainages. (vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc. *(This is identical to Aesthetics PP 4.1-2(d) and Biological Resources PP 4.4-1(b).)*			
LAND USE					
4.9-1. Implementation of the 2005 LRDP would result in changes in on-campus land use. These changes could be substantially incompatible with existing adjacent land uses. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.	**PS Land Use 1** Achieve academic core densities of 1.0 FAR or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses. **PS Land Use 2** In order to achieve 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 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 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect	**PP 4.9-1(a)** The campus shall provide design architects with the 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 architects with the Landscape Master Plan and instructions to develop project-specific landscape plans that are consistent with the Master Plan 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(c)** The campus shall continue to relocate, where feasible, mature "specimen" trees that would be removed as a result of construction activities on the campus. *(This is identical to Aesthetics PP 4.1-2(b).)*	LS	None required.	LS

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	wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration. **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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. **PS Open Space 5** Retain the Carillon Mall as a major Campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. **PS Open Space 6** Provide a new Campus Landmark Open Space on the West Campus, The Grove, to reflect campus citrus heritage and as a gathering/activity space. **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				

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	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 **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Conservation 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. **PS Conservation 4** Preserve historic buildings to the extent feasible. **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 Master Plan to ensure conformity with LRDP Planning Strategies. **PS Development Strategy 3** Review other plans that may be prepared, such as district, sub-area plans, or transportation plans, for conformity with the goals and design intent of [the LRDP].				
4.9-2 Implementation of the 2005 LRDP could conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. With	**PS Land Use 1** Achieve academic core densities of 1.0 FAR or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses.	Implementation of the following Programs and Practices would assure consistency with applicable land use plans and policies: ■ PP 4.4-1(a) and (b)	LS	Implementation of the following Mitigation Measures would assure consistency with applicable land use plans and policies:	LS

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implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this impact would be *less than significant*.	**PS Land Use 2** In order to achieve 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 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 Open Space 1** Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion. **PS Open Space 2** Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration **PS Open Space 3** In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever possible feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value. **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. **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.	■ PP 4.4-3 ■ PP 4.5-3 ■ PP 4.5-5 ■ PP 4.6-1(a) ■ PP 4.7-7(a) and (b) ■ PP 4.9-1(a) through (c) ■ PP 4.10-7(a) through (d) ■ PP 4.10-8 ■ PP 4.14-1		MM 4.4-1(a) and (b) MM 4.4-3(a) and (b) MM 4.4-4(a) and (b) MM 4.5-1 and MM 4.5-2 MM 4.6-1(a) MM 4.7-8(a) and (b) MM 4.8-9(a) and (b)	

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	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 **PS 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. **PS Conservation 2** Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. **PS Conservation 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. **PS Conservation 4** Preserve historic buildings to the extent feasible.				
4.9-3. Implementation of the 2005 LRDP would not conflict with any applicable habitat conservation plan or natural community conservation plan and *no impact* would result.	None identified.	None identified.	NI	N/A	NI
NOISE					
4.10-1. Implementation of the 2005 LRDP would not expose new on-campus student residential uses to noise levels in excess of the State's 45 dBA CNEL interior noise standard. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this 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)** 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 L_{eq} during the day and 40 dBA L_{eq} 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)** 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	LS	None required.	LS

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		Luther King 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 L_{dn} 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.			
4.10-2. The 2005 LRDP construction could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. Even with implementation of the relevant Programs and Practices and Mitigation Measure, this impact would be *significant and unavoidable*.	None identified.	**PP 4.10-2** The UCR campus shall limit the hours of exterior construction activities from 7:00 A.M. to 9:00 P.M. Monday through Friday and 8:00 A.M. to 6:00 P.M. 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.	S	**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.	SU
4.10-3. The 2005 LRDP construction 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.	LS	None required.	LS
4.10-4. Operation of facilities built within the 2005 LRDP 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.	LS	None required.	LS
4.10-5. Implementation of the 2005 LRDP would generate increased local traffic volumes, but would not cause a substantial permanent increase at on- or off-campus locations. With implementation of the relevant Programs and Practices, this 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.	LS	None required.	LS

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Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.10-6. Implementation of the 2005 LRDP could add new stationary source noise that could cause a substantial permanent on- or off-campus increase in ambient noise levels. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this 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. **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.	LS	None required.	LS
4.10-7. The 2005 LRDP construction could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. Even with implementation of the relevant Programs and Practices, this impact would be *significant and unavoidable.*	None identified.	**PP 4.10-7(a)** To the extent feasible, construction activities shall be limited to 7:00 A.M. to 9:00 P.M. Monday through Friday, 8:00 A.M. to 6:00 P.M. 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.	S	No feasible mitigation measures identified.	SU
4.10-8. The 2005 LRDP construction could result in substantial temporary or periodic increases in ambient noise levels at locations off campus. Even with implementation of the relevant Programs and Practices, this impact would be *significant and unavoidable.*	None identified.	**PP 4.10-7(a)** To the extent feasible, construction activities shall be limited to 7:00 A.M. to 9:00 P.M. Monday through Friday, 8:00 A.M. to 6:00 P.M. 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. **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.	S	No feasible mitigation measures identified.	SU

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.10-9. Implementation of the 2005 LRDP could result in temporary or periodic increases in ambient noise levels due to special events, although special events would occur as under existing conditions. This impact would be *less than significant.*	None identified.	None identified.	LS	None required.	LS
POPULATION AND HOUSING					
4.11-1. Implementation of the 2005 LRDP would directly induce substantial population growth in the area by proposing increased enrollment and additional employment, although this increase would not result in population or housing effects that would lead to a significant impact on the environment. With implementation of the relevant 2005 LRDP Planning Strategy, 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.	LS	None required.	LS
4.11-2. Implementation of the 2005 LRDP would result in an increased demand for housing. With implementation of the relevant 2005 LRDP Planning Strategies, 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.	LS	None required.	LS
4.11-3. Implementation of the 2005 LRDP would not displace existing on-campus residents but would create additional demand for housing. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**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.	None identified.	LS	None required.	LS
4.11-4. Implementation of the 2005 LRDP would not displace substantial numbers of people that would necessitate the construction of replacement housing elsewhere. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**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.	None identified.	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
PUBLIC SERVICES					
4.12-1. Implementation of the 2005 LRDP would not result in significant environmental effects associated with the provision of new or physically altered fire protection facilities to maintain acceptable response times and fire flows. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant.*	**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.	**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.	LS	None required.	LS
4.12-2. 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. With implementation of relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant.*	**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.	**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.	LS	None required.	LS
4.12-3. Implementation of the 2005 LRDP would increase the number of school-age children in local school districts, including the Riverside Unified School District, but would not result in significant environmental effects associated with the provision of new or physically altered school facilities to accommodate the increased demand for student services. Impacts would be *less than significant.*	None identified.	None identified.	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.12-4. Implementation of the 2005 LRDP would not result in significant environmental impacts associated with the provision of new or altered library facilities to meet demand for library services. This impact would be *less than significant.*	None identified.	None identified.	LS	None required.	LS
RECREATION					
4.13-1. Implementation of the 2005 LRDP would increase the campus population and result in additional demand for recreational space. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**PS Open Space 7** Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.	None identified.	LS	None required.	LS
4.13-2 Implementation of the 2005 LRDP would include construction of recreational facilities that may have an adverse physical effect on the environment. This impact would be *less than significant.*	None identified.	None identified.	LS	None required.	LS
4.13-3. Implementation of the 2005 LRDP would result in the conversion of existing recreational fields to nonrecreational uses and construction of new ones. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**PS Open Space 7** Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.	None identified.	LS	None required.	LS
TRANSPORTATION AND TRAFFIC					
4.14-1. Implementation of the 2005 LRDP would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service. Even with implementation of the relevant 2005 LRDP Planning Strategies, Program and Practice, and Mitigation Measures, this impact would be *significant and unavoidable.*	**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	**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.)*	S	**MM 4.14-1(a)** The intersection of 3rd Street/Chicago Avenue would require an additional left-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.) **MM 4.14-1(b)** In addition to the improvements identified for the 'Without Project' scenario, the intersection of Blaine Street/Iowa Avenue would require an additional left-turn lane on the eastbound approach, and a separate through and right-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.) **MM 4.14-1(c)** In addition to the improvements identified for the 'Without Project' scenario, the intersection of University Avenue/Chicago Avenue would require a separate through and a right-turn lane on the southbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)	SU

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
	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			**MM 4.14-1(d)** The intersection of University Avenue/Iowa Avenue would require an additional left-turn lane on the eastbound approach to operate at LOS D or better. The approach currently consists of one left-turn lane, two through lanes, and one right-turn lane. The mitigated approach would consist of two left-turn lanes, one through lane, and one shared through/right-turn lane. (This intersection is under the jurisdiction of the City of Riverside.) **MM 4.14-1(e)** In addition to the improvements identified for the 'Without Project' scenario, the intersection of Martin Luther King Boulevard/Chicago Avenue would require an additional through lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.) **MM 4.14-1(f)** In addition to the improvements identified for the 'Without Project' scenario, the intersection of Martin Luther King Boulevard/Canyon Crest Drive would require an additional left-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.) **MM 4.14-1(g)** The intersection of Linden Street/Aberdeen Drive would require a shared through/left-turn lane and a right-turn lane on the eastbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.) **MM 4.14-1(h)** In addition to the improvements identified for the 'Without Project' scenario, the intersection of Blaine Street/Iowa Avenue would require an additional left-turn lane on the southbound approach, an additional left-turn lane on the eastbound approach, an additional left-turn lane on the westbound approach, and a separate through and right-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.) **MM 4.14-1(i)** The intersection of University Avenue/Iowa Avenue would require an additional left-turn lane on the eastbound approach, and a separate through and right lane on the southbound approach to operate at LOS D or better. The southbound approach currently consists of one left-turn lane, one through lane, and one shared through/right-turn lane. The mitigated southbound approach would consist of one left-turn lane, two through lanes, and one right-turn lane. (This intersection is under the jurisdiction of the City of Riverside.)	

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
				MM 4.14-1(j) The intersection of Martin Luther King Boulevard/Chicago Avenue would require an additional through and an additional right-turn lane on the eastbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.) **MM 4.14-1(k)** In addition to the improvements identified for the 'Without Project' scenario, the intersection of Martin Luther King Boulevard/Canyon Crest Drive would require an additional left-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.) **MM 4.14-1(l)** The intersection of Linden Street/Aberdeen Drive would require a shared through/left-turn lane and a right-turn lane on the eastbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.)	
4.14-2. Implementation of the 2005 LRDP would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. Even with implementation of the relevant Program and Practice, this impact would be *significant and unavoidable.*	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.	S	No feasible mitigation measures identified.	SU
4.14-3. Implementation of the 2005 LRDP would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program. This impact would be *significant and unavoidable.*	None identified.	None identified.	S	No feasible mitigation measures identified.	SU
4.14-4. Implementation of the 2005 LRDP would not result in hazards due to design features or land use incompatibilities. With implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, this impact would be *less than significant.*	None identified.	**PP 4.14-4** The campus shall provide design architects 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.	LS	None required.	LS

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Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.14-5. 2005 LRDP construction could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.	None identified.	**PP 4.14-4** The campus shall provide design architects 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 4.14-5** 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. *(This is identical to Hazards and Hazardous Materials PP 4.7-7(a).)*	LS	None required.	LS
4.14-6. 2005 LRDP construction would not substantially increase pedestrian hazards due to closure of sidewalks or paths. With implementation of the relevant Program and Practice, this 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.	LS	None required.	LS
4.14-7. Implementation of the 2005 LRDP would not impair emergency access in the long-term. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.	**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.	None required.	LS	None required.	LS
4.14-8. 2005 LRDP construction could impair emergency access during the short-term. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.	None identified.	**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. *(This is identical to Hazards and Hazardous Materials PP 4.7-7(a).)* **PP 4.14-8** To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Design and Construction shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes. *(This is identical to Hazards and Hazardous Materials PP 4.7-7(b).)*	LS	None required.	LS
4.14-9. Implementation of the 2005 LRDP would not result in inadequate parking capacity. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, 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. **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	**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.)*	LS	None required.	LS

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	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 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				
4.14-10. Implementation of the 2005 LRDP would increase demand for parking in areas adjacent to the campus. With implementation of the relevant 2005 LRDP Planning Strategies and Mitigation Measures, this potentially significant 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. **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 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	None required.	S	**MM 4.14-10(a)** The campus shall work with the City of Riverside to monitor the demand for off-campus parking in residential neighborhoods or at commercial establishments to determine whether use of off-campus parking by the campus population is substantially restricting availability for neighborhood residents or patrons of commercial establishments **MM 4.14-10(b)** If the campus and the City of Riverside mutually determine that use of off-campus parking by members of the campus population has substantially restricted availability to residents and patrons of commercial establishments, the campus and the City will work cooperatively to implement appropriate measures, which may include, but not be limited to (i) Increased enforcement of existing parking regulations (ii) Changes in parking regulations (e.g., time restrictions for on-street parking) (iii) A permit parking program for affected residential neighborhoods and/or commercial facilities.	LS

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4.14-11. Construction of new facilities could result in temporary elimination of on-campus parking spaces and could require additional temporary parking for construction workers. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measure, this potentially significant impact would be reduced to a *less-than-significant* level.	**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.	None required.	S	**MM 4.14-11** If on-campus parking is not available, off-site construction worker parking shall be provided with shuttle service to the remote parking location	LS
4.14-12. Implementation of the 2005 LRDP would not conflict with applicable policies, plans, or programs supporting alternative transportation. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, 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. **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 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	**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.)*	LS	None required.	LS
4.14-13. Implementation of the 2005 LRDP would increase demand for public transit. With implementation of the relevant 2005 LRDP Planning Strategy, Program and Practice, and Mitigation Measure, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Transportation 1** Develop an integrated multi-modal transportation plan to encourage walking, biking and transit use.	**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.)*	S	**MM 4.14-13** As part of the Multi-modal Transportation Program, the UCR Transportation and Parking Services department will work with transit service providers on an annual basis to monitor demand for transit services, to identify needed service improvements, and encourage the implementation of any such improvements.	LS

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UTILITIES					
4.15-1. Development under the 2005 LRDP would not require the construction of new or expanded water treatment facilities. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant.*	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	**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 local evaporation rates 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).)*	LS	None required.	LS
4.15-2. Development under the 2005 LRDP 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. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant.*	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	**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	LS	None required.	LS

N/A = Not Applicable LS = Less Than Significant NI = No Impact S = Significant SU = Significant and Unavoidable Impact Requiring a "Statement of Overriding Considerations" Prior to Project Approval

Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
		(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 local evaporation rates 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).)*			
4.15-3. Development under the 2005 LRDP 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*.	None identified.	None identified.	LS	None required.	LS
4.15-4. Implementation of the 2005 LRDP would comply with all applicable federal, State, and local statutes and regulations related to solid waste. This impact would be *less than significant*.	None identified.	None identified.	LS	None required.	LS
4.15-5. Development under the 2005 LRDP would not exceed wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board. With implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, this impact would be *less than significant*.	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	**PP 4.15-5** The campus will continue to comply with all applicable water quality requirements established by the SARWQCB. *(This is identical to Hydrology PP 4.8-1.)*	LS	None required.	LS
4.15-6. Development under the 2005 LRDP could require the construction of new or expanded wastewater conveyance and treatment systems. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	None identified.	S	**MM 4.15-6(a)** UCR will work with the City of Riverside to evaluate the capacity of existing sewer trunk lines serving the campus and estimate the future impact of LRDP implementation on available capacity. **MM 4.15-6(b)** If the study of sewer trunk line capacity determines that available capacity would be exceeded, UCR and the City will negotiate payment of fair share of improvements to provide sufficient discharge capacity to meet campus needs. UCR shall contribute its fair share payments and additional required trunk line capacity shall be provided by the City prior to exceedance of sewer trunk line capacity.	LS

N/A = Not Applicable LS = Less Than Significant NI = No Impact S = Significant SU = Significant and Unavoidable Impact Requiring a "Statement of Overriding Considerations" Prior to Project Approval

Table 2-1 Summary of Environmental Effects and Mitigation Measures

Impact	*2004 LRDP Planning Strategies*	*Existing Campus Programs and Practices*	*Level of Significance (prior to Mitigation)*	*Mitigation Measures*	*Level of Significance (with Mitigation)*
4.15-7. Implementation of the 2005 LRDP would not increase wastewater generation such that treatment facilities would be inadequate to serve the project and the provider's existing commitments. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	None identified.	LS	None required.	LS
4.15-8 Implementation of the 2005 LRDP could increase the demand for electricity, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	None identified.	LS	None required.	LS
4.15-9. Implementation of the 2005 LRDP 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 a significant environmental impact. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	None identified.	LS	None required.	LS
4.15-10. Implementation of the 2005 LRDP would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant.*	**PS Conservation 5** Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.	None identified.	LS	None required.	LS

N/A = Not Applicable LS = Less Than Significant NI = No Impact S = Significant SU = Significant and Unavoidable Impact Requiring a "Statement of Overriding Considerations" Prior to Project Approval

Chapter 3 PROJECT DESCRIPTION

3.1 INTRODUCTION

A Long-Range Development Plan (LRDP) is defined by the Public Resources Code of the State of California (Section 21080.09) as a "physical development and land use plan to meet the academic and institutional objectives for a particular campus or medical center of public higher education." The 2005 LRDP proposes to accommodate a total enrollment of 25,000 (three-quarter average headcount) students by the academic year 2015/16, and projects a need for approximately 7,105,691 gross square feet of new academic and support space to accommodate enrollment growth and meet program needs. This chapter of the EIR summarizes the development characteristics of the 2005 LRDP. For more detailed information, refer to the 2005 LRDP.

3.2 PROJECT LOCATION

The UCR campus is located in the City of Riverside, three 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 is composed of western Riverside and San Bernardino Counties. Figure 3-1 shows the location of the campus in a regional context. The campus is generally bounded by Blaine Street on the north, Watkins Drive 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 3-2 shows the local setting of the campus.

The campus consists of approximately 1,112 acres, with approximately 600.8 acres east of the freeway serving as the academic core and the location for the majority of existing academic, housing, and support facilities. The portion of the campus west of the freeway (approximately 511.3 acres) is primarily occupied by agricultural teaching and research fields, except for the University Extension (UNEX), Highlander Hall (office facility), the International Village (student housing complex), Human Resources (office building), and a large surface parking lot (No. 30). Figure 3-3 is a map of the campus, Figure 3-4 is an aerial photo of the campus, and Figure 3-5 shows the campus topography.

The land uses surrounding the campus in the City of Riverside are primarily residential, with some commercial uses along the major streets. To the north of the campus, the area is comprised of residential uses, open space, and some industrial uses. To the east, the adjacent land uses are primarily single-family residential, with the Box Springs Mountains further to the east. The southern border of the campus is generally defined by the I-215/SR-60 freeway and a line roughly following Le Conte Drive to the west. To the south and west, residential and commercial uses are adjacent to the campus. The western portion of the campus, primarily occupied by agricultural teaching and research fields, is generally separated

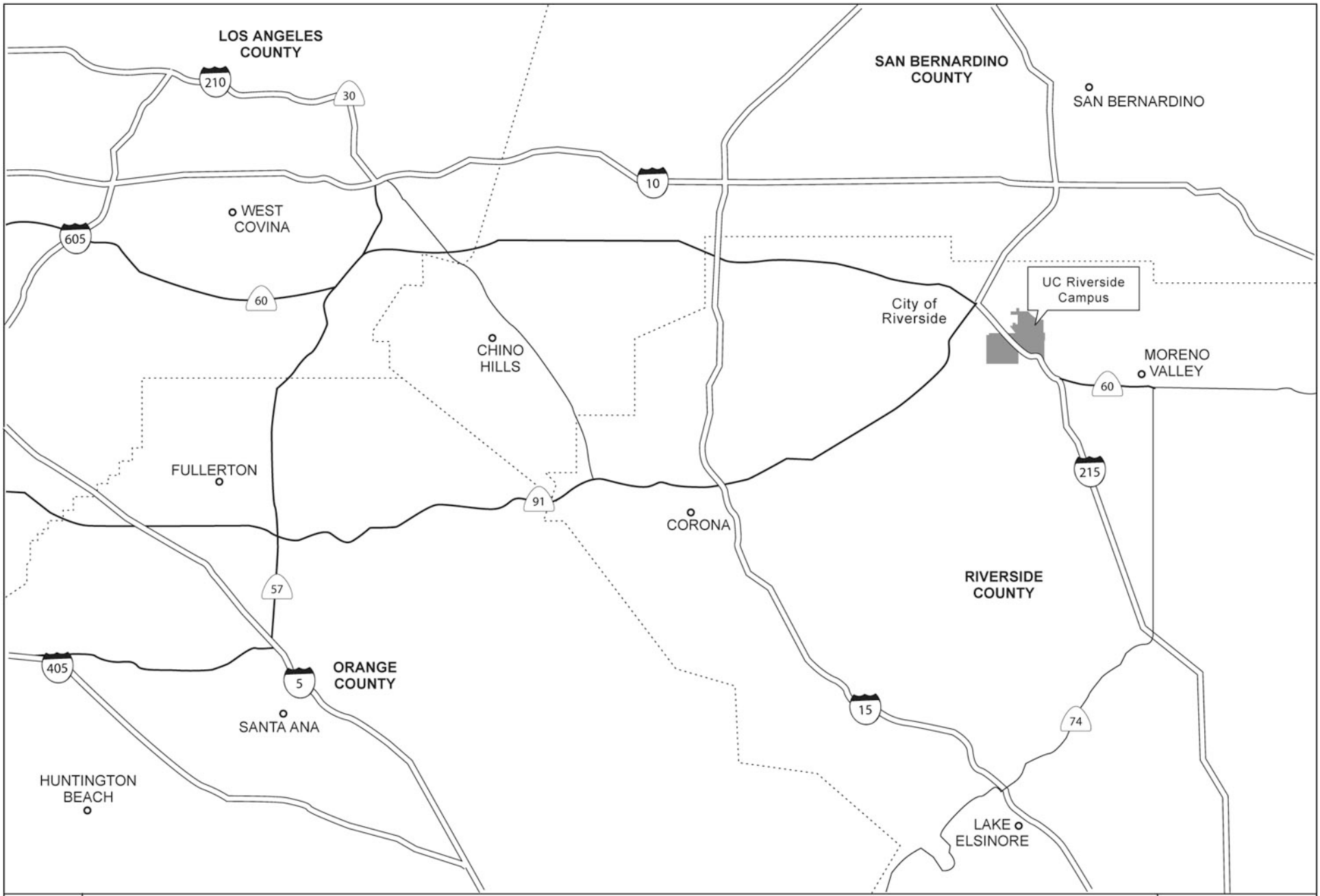


FIGURE **3-1**

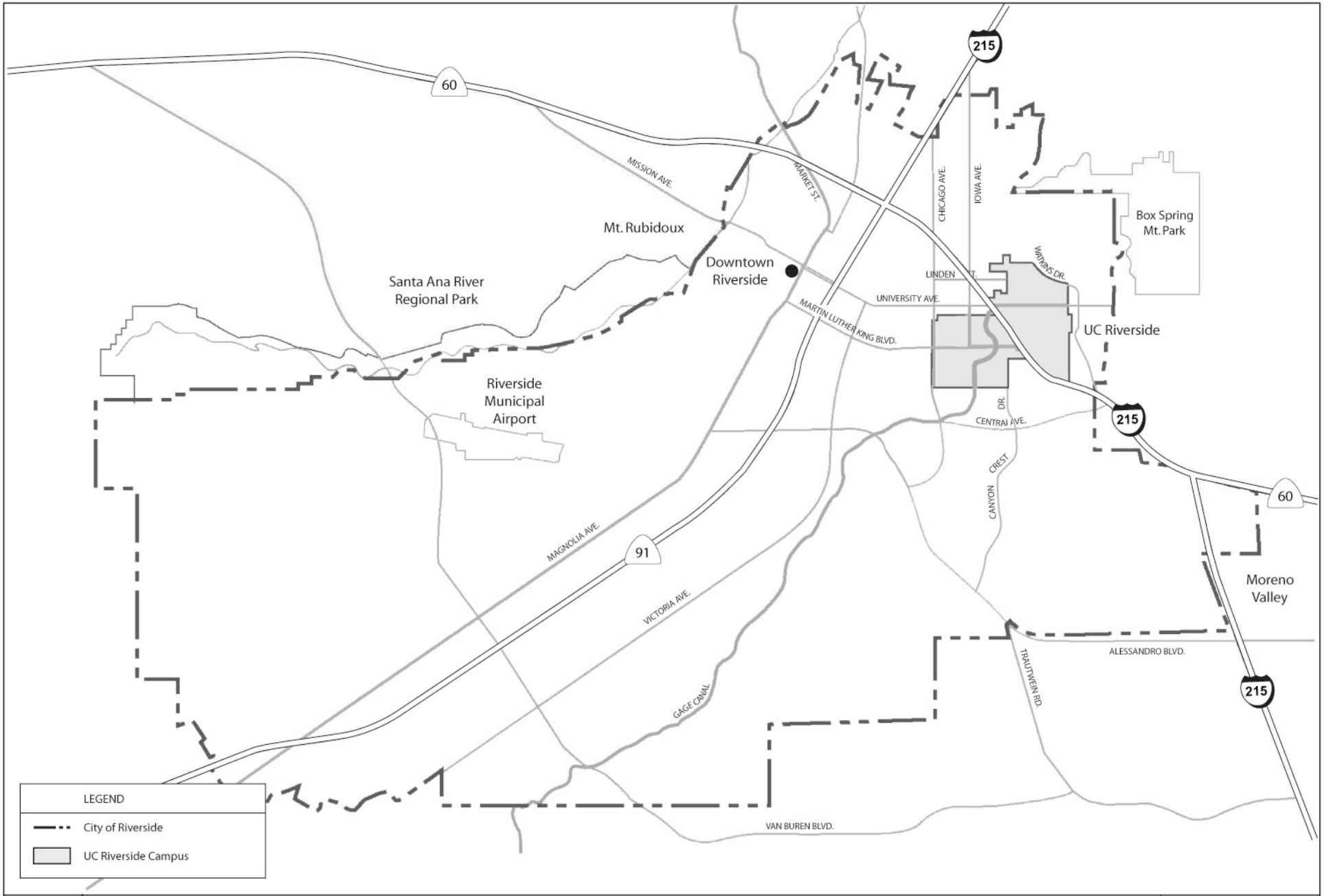
Regional Context

***Source*:** EIP Associates, 2005

UC Riverside

Not to Scale

10537-00



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10537-00

FIGURE **3-2**

Local Setting

Source: UC Riverside LRDP, 2005

UC Riverside

Not to Scale

EIP ASSOCIATES

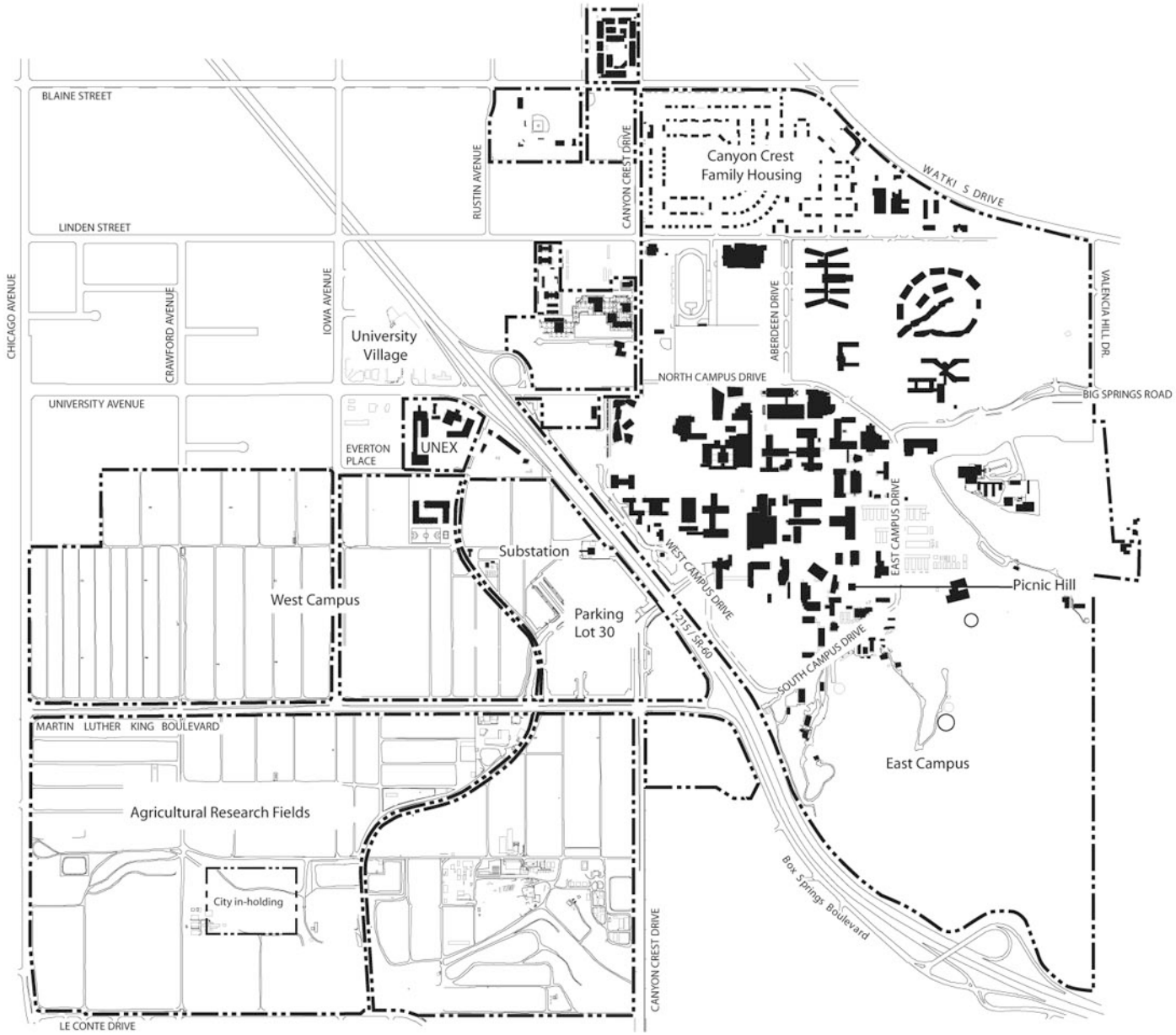

FIGURE **3-3**

Campus Map

Scale: 1" = 1,400'

10537-00

***Source*:** UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

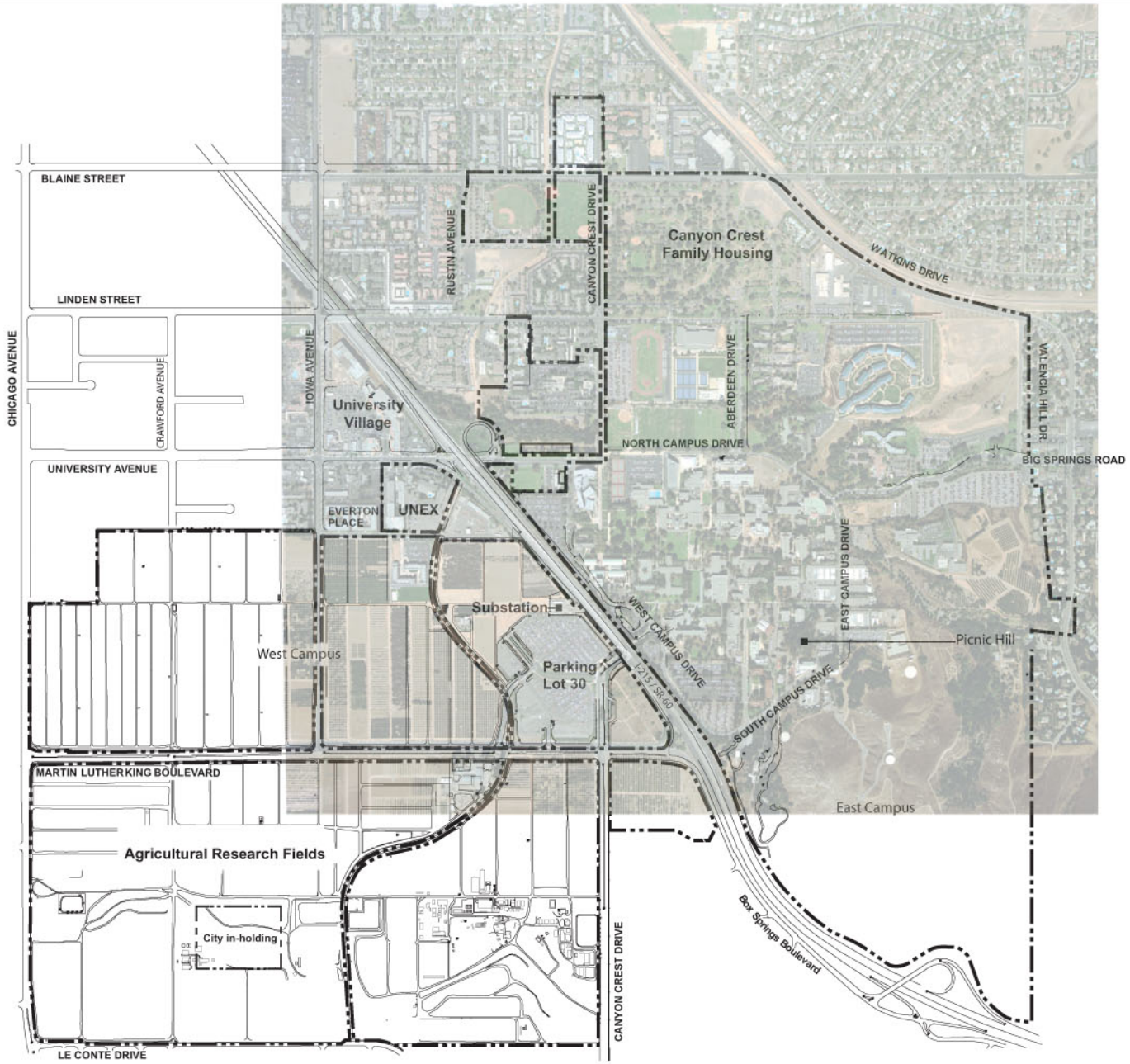

FIGURE **3-4**

Partial Aerial Photo of UC Riverside Campus, 2002

Not to Scale

10537-00

Source: UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

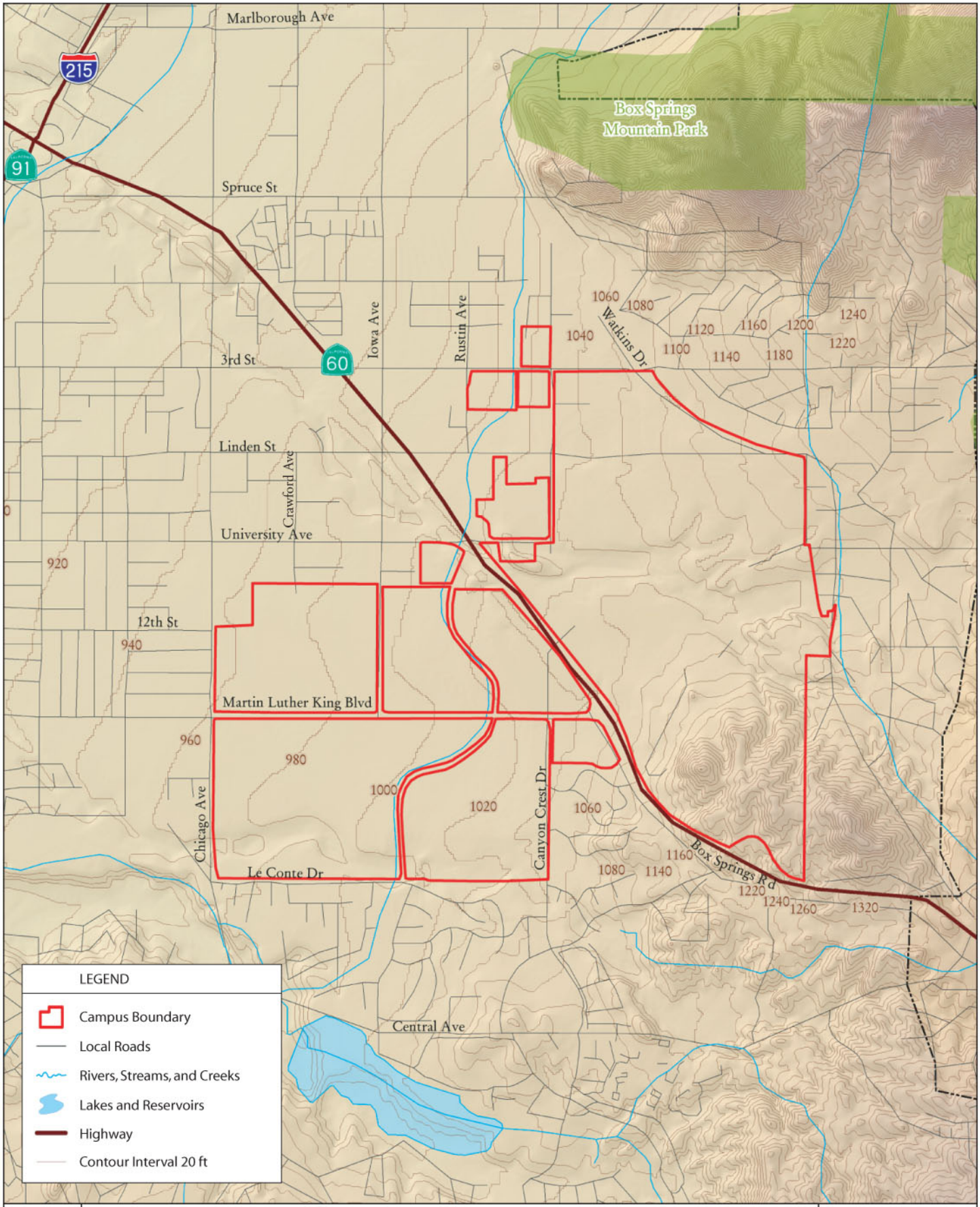

FIGURE **3-5**

UCR Campus Topography

Not to Scale

10537-00

Sources: USGS, DEMs, Riverside East, 1996; EIP Associates, 2004

UC Riverside

EIP ASSOCIATES

from commercial uses along University Avenue by multi-family residential structures. For a more detailed discussion of adjacent land uses, refer to Section 4.9 Land Use.

3.3 CONTEXT FOR THE 2005 LRDP

Student enrollment demand in California is expected to increase over the next ten to fifteen years, as a result of several converging demographic factors, including substantial population growth projected for the State of California over this time period and a relative increase in the proportion of college-age students as the children of the post-WWII "baby boom" reach college age. In response to this enrollment pressure, State policymakers asked the University of California, the California State University, and the community college systems to study the feasibility of accommodating the projected growth in eligible student applicants.

The University of California remains committed to fulfilling its responsibility under the California Master Plan for Higher Education to accommodate all eligible students from among the top 12.5 percent of high school graduates who choose to attend. Accordingly, in January 2000, the President of the University of California asked each UC campus to consider the feasibility of accommodating enrollment growth over the next decade, beyond the 2005/06 horizon year covered under the existing campus LRDPs. A planning target of approximately 25,000 FTE students was identified for UCR by the year 2015/16. Because this enrollment-planning target would exceed the projection of 18,050 students in the 1990 LRDP, the campus has developed the 2005 LRDP.

3.4 PROJECT OBJECTIVES

The 2005 LRDP will serve as a land use plan to guide the physical development of the UCR campus to accommodate 25,000 students by the year 2015/16 (or until a new LRDP is approved by The Regents). The LRDP would not expire in 2016, and it would remain in effect until a new LRDP is prepared. The plan describes preferred land uses and projects future space needs to accommodate projected enrollment growth and to support the University's academic goals, which were updated during the Vision 2010 planning exercise. The purpose of the Vision 2010 process was to articulate themes for a fundamental vision of what UCR should be in the future.

The LRDP provides the physical expression of land uses, space needs, and planning principles that support the mission of the University. UCR's mission is to provide high quality instruction, research, and public service, and this will not change. However, the character of academic and supporting programs and services may be transformed in response to current academic program initiatives and the need to provide a learning environment that is appropriate for the twenty-first century.

Based upon the goals and planning principles articulated in the 2005 LRDP, the following academic, physical, and operational objectives have been articulated for UCR.

3.4.1 Academic Objectives

- Offer teaching, research, and service programs of the highest quality to serve the needs of the Riverside region, the State of California, and the nation.
- Enhance the unique UCR image and identity.
- Foster diversity among students, faculty, and staff through curriculum, academic programs, and public service.
- Ensure student access in a manner consistent with the Master Plan for Higher Education in California, while continuing to enhance the quality of the academic program and meeting the University enrollment growth target to accommodate approximately 25,000 headcount students by 2015/16.
- Develop an academic, administrative, and physical environment that supports outstanding research and creative activity.
- Increase size/critical mass of the on-campus community, thereby improving opportunities for social interaction, socialization, and learning.
- Continue to serve the Riverside region through provision of cultural, educational, and other community programs.

3.4.2 Physical Objectives

- Develop approximately 7.1 million gsf of additional building space to accommodate projected growth in student enrollment and meet academic program and support space needs.
- Accommodate planned growth for UCR to 25,000 students while retaining flexibility for unanticipated student growth needs in the future.
- Continue the infill development of the East Campus and expand to the West Campus while maintaining a compact development pattern.
- Recognize teaching and research change (e.g., interdisciplinary endeavors) in the organization and layout of an academic zone rather than college precincts.
- Provide housing for 50 percent of the student enrollment in on-campus or campus-controlled student housing.
- Provide a hierarchy of open spaces that range from natural open space reserve to neighborhood parks, appropriate to the location and function of each space.
- Reserve land at the western edge of the campus for future growth not known at this time
- Provide recreational facilities for students, faculty, and staff on campus.
- Use the landscape of the campus to express the character, climate, and environment of the Riverside region, a semi-arid region.
- Improve university/town connections and interaction, including improving the future role of University Avenue
- Focus high activity uses in places that will promote connectivity and interaction within the campus and between the campus and the City.

- Clarify and strengthen existing pedestrian and vehicular circulation to enhance way-finding and promote safety.
- Provide accessibility for the disabled in the siting and design of new buildings or the renovation, restoration, or reconstruction of existing buildings.

3.4.3 Operational Objectives

- To the extent practicable, create a regional model of planning, design, and environmental stewardship, protecting the natural environment and incorporating sustainable planning and design practices
- Provide and promote opportunities for the use of alternative transportation modes, including walking, bicycling, and public transit.
- Promote the efficient use of water through the use of natural drainage patterns, drought tolerant landscaping, and recycling and reuse.
- Continue to acquire and use clean fuel vehicles for public transit and fleet vehicles.
- Plan, design, and implement the proposed project within the practical constraints of available funding sources.

3.5 LRDP PLANNING STRATEGIES

The magnitude of growth proposed for the campus under the 2005 LRDP is substantial and will change the character of UCR. As such, facility growth on campus and the arrangement of future land uses will be guided by a set of planning strategies. In order to achieve campus goals and to accommodate the program anticipated to be associated with an enrollment of 25,000 students by the academic year 2015/16, the 2005 LRDP has articulated the following LRDP Planning Strategies to guide the physical development of the campus.

Land Use

1. Achieve academic core densities of 1.0 FAR [5]or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses.
2. In order to achieve 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.
3. Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.
4. Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.
5. Remove existing family housing units on the East Campus, and provide replacement and additional units of family housing on the West Campus.

[5] Floor Area Ratio is a commonly used term to measure development density that indicated the ration of building gross square footage (floor) to the land area associated with the building area. Thus a 1.0 FAR indicates that a 10,000 sq. ft. building on a 10,000 sq. ft. site. A two story building would occupy ½ of the site.

6. Provide expanded athletics and recreational facilities and fields on the East and West Campuses, adjacent to concentrations of student housing.
7. Over time, relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate.

Open Space

1. Protect the steep and natural hillsides on the southeast campus designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.
2. Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used, where needed, for erosion, screening, and restoration.
3. In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible, existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.
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.
5. Retain the Carillon Mall as a major Campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length. Other named malls and walks will be 100 feet wide.
6. Provide a new Campus Landmark Open Space on the West Campus, The Grove, to reflect the campus citrus heritage and provide a gathering/activity space.
7. Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.

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.
2. Encourage a "permeable" edge with the community where interaction is desirable, especially along University Avenue and in areas where a high proportion of students live in close proximity to the campus.
3. Discourage vehicular traffic originating off campus from moving through the campus as a short cut.
4. Provide strong connections within the campus and its edges to promote walking, bicycling, and transit use, rather than vehicular traffic.
5. Continue to improve campus signage and wayfinding to provide easy access for visitors and to discourage impacts in neighboring residential areas.

6. Locate public-oriented uses, such as performance facilities, galleries and major sports venues, where they can easily be accessed and where they can contribute to the vitality and economic health of businesses along University Avenue.
7. Work cooperatively with the City of Riverside to effect the redevelopment of University Avenue between the campus and Chicago Avenue as a high intensity mixed use district, with an abundance of campus/community service businesses and uses.
8. Encourage the City to explore the opportunity for student housing in a mixed use configuration along University Avenue.
9. Strongly encourage private developers to provide a variety of housing types that target both current and future needs of the overall community and the campus.
10. Use City/UCR/RCC enhancement of Downtown cultural arts and entertainment resources and the campus need for off-campus housing as the foundation of revitalization program.
11. Support the City in their coordination of Block Grant Redevelopment set-aside and other funds for the upgrading of Neighborhood Reinvestment Areas adjacent to University Avenue.
12. Support the City in creating design guidelines for community, student, faculty, staff, and visitor housing along University Avenue that has a friendly street presence.
13. Support the City in amending the Eastside Community Plan to update housing strategies and action plans for rehabilitation of existing housing stock and new construction. This should be done in conjunction with modification of the University Avenue Specific Plan.
14. Support the City in creating a "town/gown square" at the southwest corner of the intersection of University and Chicago Avenues to provide retail and services for the community and campus.
15. Support the City in developing design guidelines for mixed use housing and retail along University Avenue.
16. Partner with the City to create a Riverside/UCR Entrepreneurial Program at the "town/gown square" related to minority business opportunities in the University Avenue and Hunter Business Park areas.
17. Work with the City to link the open spaces of UCR, University Avenue, the Marketplace, and the Downtown with enhanced streetscape treatments for University to Market and from Market to Santa Fe Street along Mission Inn Avenue/7th Street.
18. Work with the City to link the open spaces of UCR with the Citywide Trail Network.
19. Work with the City to develop streetscape concepts with banners, lighting, street furniture, and public art that celebrates the linkages between the University and Downtown. Banners should highlight cultural and artistic events in Downtown and UCR when appropriate.
20. Work with the City to evaluate the conversion of University Avenue from Iowa Avenue to the I-215/SR-60 freeway from an auto emphasis street to a biking, pedestrian, transit street with localized auto access. Consider Martin Luther King Boulevard/14th Street and Blaine/3rd Street as primary freeway connection streets.

21. Work with the City to emphasize University Avenue as the link between the UCR campus and Downtown rather than as the link to the freeways.
22. Work with the City to encourage bicycle and pedestrian use and safety, including minimizing the number of curb cuts for residential and retail improvements along University Avenue to Chicago Avenue and then to the Downtown.

Transportation

1. Develop an integrated multi-modal transportation plan to encourage walking, biking, and transit use.
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.
3. Provide a continuous network of bicycle lanes and paths throughout the campus, connecting to off-campus bicycle routes.
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.
5. Provide bicycle parking at convenient locations.
6. Implement parking management measures that may include
    - Restricted permit availability
    - Restricted permit mobility
    - Differential permit pricing

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

1. Establish a design review process to provide regular review of building and landscape development on campus.

2. Review and update, as needed the Campus Design Guidelines and the Campus Landscape Design Guidelines to ensure conformity with LRDP Planning Strategies.
3. Review other plans that may be prepared, such as district, sub-area plans, or transportation plans, for conformity with the goals and design intent of the 2005 LRDP.

3.6 PROJECT DESCRIPTION

The project description provided herein is a summary of the major elements of the 2005 LRDP, and provides information regarding (1) student enrollment and the campus population, (2) campus development capacity, (3) student housing, (4) land use, (5) transportation and circulation, and (6) utility infrastructure. For more detailed information, refer to the 2005 LRDP.

3.6.1 Student Enrollment and Campus Population

Student enrollment at UCR is discussed in the LRDP in terms of student *headcount* enrollment. For budgetary purposes, student population is also expressed in FTE or full time equivalent. UCR uses 1 (0.95 rounded up) FTE to equal 1 headcount. While the campus operates 365 days a year, the academic calendar consists of the *regular session* (fall, winter, and spring quarters) and *summer session* (twelve weeks). Although the majority of students are enrolled full-time, the total student headcount also includes some part-time students. Because of variability in student schedules, not all students enrolled at UCR are anticipated to be on campus at any one given time. Attendance during the summer is substantially less than during the regular session. Headcount is traditionally higher in the fall quarter and fall headcount is traditionally higher than during winter and spring. 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 management).

The *on-campus population*, or the number of individuals either enrolled or employed on campus (represented by headcount), consists of students, academic employees, post-doctoral researchers, nonacademic staff employees, and other individuals. Students make up the largest headcount group, followed by staff and academic employees. Because the student population may vary over the academic year, the number of students is usually expressed as a three-quarter average (for the regular session). *Other individuals* comprise the remaining component of the campus population. This category includes conference and seminar participants, volunteers, library visitors, vendors, and construction workers.

Student enrollment would increase from 12,703 (three-quarter average students for the 2000/2001 academic year) to a headcount of approximately 25,000 students by the 2015/16 academic year. This student enrollment translates into an anticipated total campus population of approximately 35,540—an estimate that includes students, academic employees, staff employees, and other individuals. The existing and projected campus population is illustrated in Table 3-1.

Table 3-1 Current and Future Projected Campus Population			
	2000/01 Baseline	*2015/16 Projection*	*Net Increase*
Students [a]	12,703	25,000	12,297
Faculty and Academic Staff [b]	865	1,726	861
Nonacademic Staff [c]	2,877	6,190	3,313
Other Individuals [d]	1,196	2,624	1,428
Total	***17,641***	***35,540***	***17,899***

Source: UCR 2005 LRDP
UCR Capital and Physical Planning, May, 2003

[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, KUCR & Highlander nonstudent staff, vendors, and construction workers. Does not include evening or weekend extension students or evening or weekend visitors.

3.6.2 Campus Development Capacity

The Draft 2005 LRDP estimates that a total of approximately 11.8 million gross square feet (gsf) of academic buildings, support facilities, and student housing are required to support a total future enrollment of 25,000 students. A breakdown of the projected space needs for the UCR campus is provided in Table 3-2. Although this is the projected amount of development for the campus, the actual amount of development would also depend on the Campus' ability to obtain available funding. If funding is not available, then full implementation of the proposed development would not occur.

Table 3 2 Projected Development in Gross Square Feet			
Category	*Existing (Fall 2001)*	*Projected 2015/16*	*Net 2005 LRDP Increase*
Academic Programs	2,190,947	5,500,000	3,309,053
Professional Schools	103,365	700,000	596,635
Administration	163,018	500,000	336,982
Public Service	206,512	400,000	193,488
Noninstitutional Agencies	102,181	102,181	0
Student Services	187,444	500,000	312,556
Maintenance & Physical Plant	132,263	200,000	67,737
Recreation & Athletics	98,269	470,000	371,731
Housing	1,513,017	3,430,526	1,917,509
Totals	***4,697,016***	***11,802,707***	***7,105,691***

Source UCR 2005 LRDP
UCR Capital and Physical Planning, April 2003

With a baseline of approximately 4.7 million gsf and a proposed increase of approximately 7.1 million gsf of building space, the total amount of occupied space on the UCR campus would increase to approximately 11.8 million gsf with implementation of the 2005 LRDP.

In addition to the development of new buildings and support facilities, existing on-campus facilities will continue to be subject to renovation and modification, including seismic retrofit, expansion, maintenance, and infrastructure improvements during the time horizon of the 2005 LRDP.

3.6.3 Student Housing

The creation and support of a vibrant university community is dependent upon providing adequate housing for students, particularly undergraduates, and also for graduate students and students with dependants. The 1990 LRDP established a goal of 35 percent of students in campus housing (on campus or in University-controlled housing). As of fall 2001, 32 percent (4,147 students at a campus enrollment of 12,703) were provided with university housing. It is widely recognized that providing high-quality, affordable student housing is essential to the educational mission of the University of California. The rising cost of housing in communities throughout the State and low vacancy rates in some areas have also driven many campuses to increase their housing stock.

The 2005 LRDP includes the following goal:

- Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.

With an estimated future enrollment of 25,000 students, this would correspond to a need for 12,500 beds of on-campus or campus-controlled housing by 2015. In addition, the following goals for student housing have been articulated:

- First-Year Students: 75 percent of first year students in campus residence halls (with housing offered to all incoming freshman)
- First-Year Transfer Students: 50 percent in residence halls or apartments

Table 3-3 presents the total number of students currently residing in University housing and the housing needs in relation to the goals incorporated into the 2005 LRDP. Housing needs are expressed in terms of number of beds. A total of 8,621 new beds would be needed to meet the LRDP goal of housing 50 percent of the projected student population.

Future residence halls are proposed to be located near existing residence halls in order to maximize efficiency with shared facilities. A portion of the campus apartments would also be located near the residence halls, while additional apartments and family student housing would be located on the West Campus with associated open spaces in the form of neighborhood parks with tot lots.

3.6.4 Land Use

UCR currently accommodates a variety of facilities on its approximately 1,112 acre campus. Most of the built facilities, including academic buildings, support facilities, student housing, and recreational space are located on the East Campus, while the West Campus is primarily occupied by agricultural teaching and research fields.

Table 3-3 On-Campus Housing Needs		
	Existing	*Additional No. of Beds Needed*
Residence Halls. Program Need: 5,906 beds		
Lothian	996	
Aberdeen Inverness	792	
Pentland Hills	1,132	
Subtotal	*2,920*	
Additional Need		2,986
Campus Apartments. Program Need: 5,880 beds		
International Village [a]	65	
Bannockburn	346	
University Plaza	148	
Stonehaven [a]	400	
Subtotal	*959*	
Additional Need		4,921
Family Housing. Program Need: 714 student beds		
Existing [b]	*(268)*	
Additional Need		714
Total New Housing Need		***8,621***

Source: UCR 2005 LRDP

[a] Third-party developer on campus land

[b] Existing Family Student Housing (of 268 units) is proposed to be demolished and replaced on the West Campus.

The 2005 LRDP proposes to continue to concentrate development of academic buildings on the East Campus, with some academic buildings, such as professional schools, on the West Campus. Development of student housing and recreational space would occur on both the East and West Campus, and parking facilities would be relocated to the campus perimeter. Table 3-4 provides a breakdown of proposed future land uses on the UCR campus. Figure 3-6 depicts the proposed location of these land uses on the UCR campus.

Based upon the Land Use Plan (Figure 3-6), implementation of the 2005 LRDP would result in the following land use patterns on the UCR campus:

East Campus

- **Infill Development in the Academic Core**: New development within the academic core would occur either as infill (currently undeveloped sites being developed) or replacement of existing facilities with larger and/or taller buildings.
- **Expansion of the Academic Core**: New academic, administrative, student support, or library buildings could be developed in the area currently occupied by the Lower Intramural Fields, along the northern edge of University Avenue (south of the Gage Basin and west of Canyon Crest Drive), a portion of Parking Lot 13 (east of the under construction Physical Sciences Building), and Parking Lot V10. In addition to academic buildings, administration and library facilities could occur at these locations.

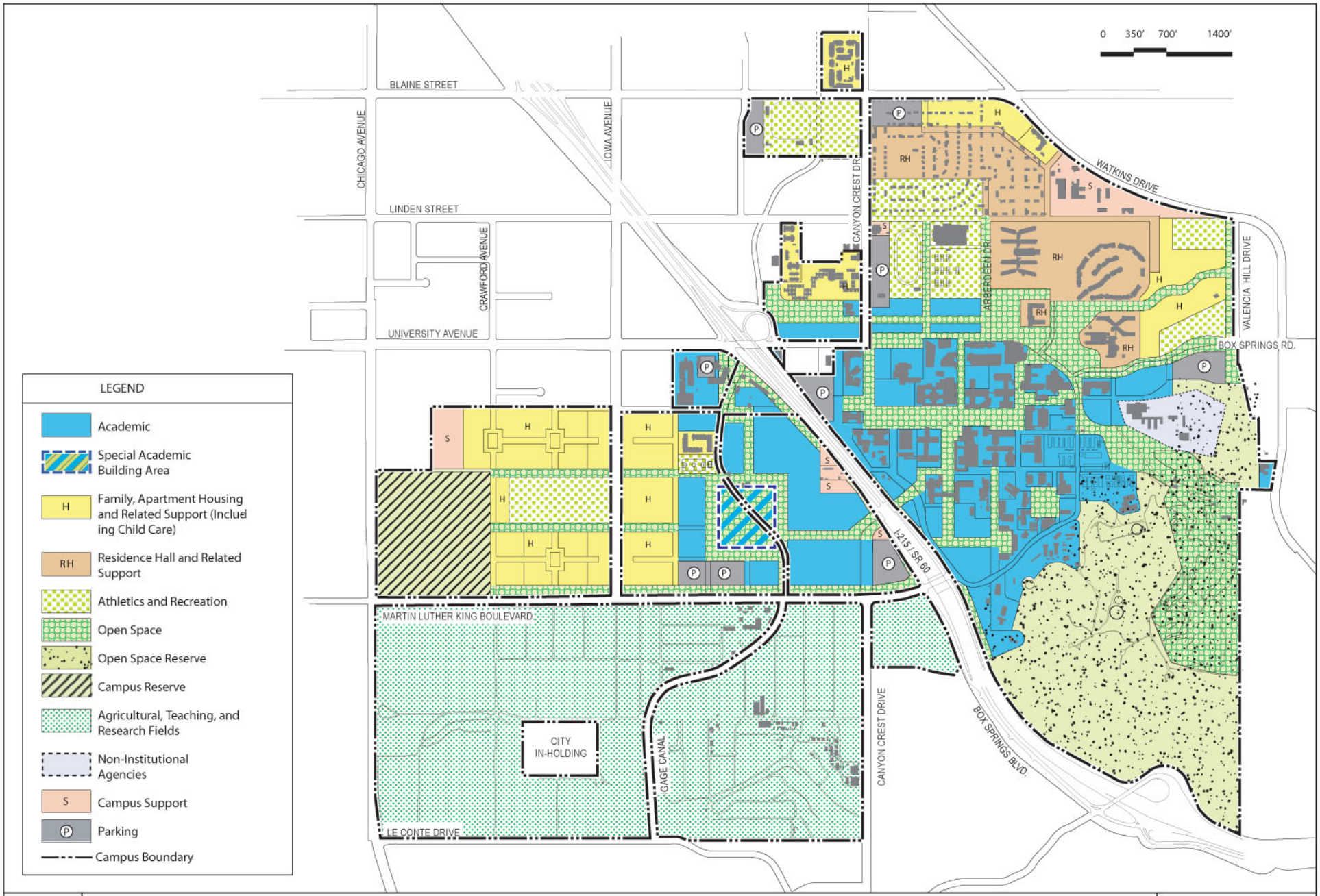

FIGURE **3-6**

Proposed Land Use Plan

Scale: 1" = 1400'

10537-00

Source: UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

Table 3-4 Summary of Proposed Land Use Areas

Land Use Category	*West Campus (in acres)*	*East Campus (in acres)*	*Total*
Academic	46.2	132.2	178.4
Special Academic Building Area	8.1	0	8.1
Family, Apartment Housing & Related Support	68.5	39.6	108.1
Residence Hall and Related Support	0	60.5	60.5
Athletics and recreation	14.1	53.4	67.5
Open Space	25.2	144.2	169.4
Open Space Reserve	0	130.5	130.5
Campus Reserve	37.3	0	37.3
Agricultural, Teaching, and Research fields	294.9	0	294.9
Noninstitutional Agencies	0	12.3	12.3
Support	9.1	11	20.1
Parking	7.9	17.1	25.0
Total [a]	***511.3***	***600.8***	***1112.1***

Source: 2005 LRDP, December 2003

[a] Does not include Cage Canal right-of-way north of Martin Luther King Boulevard

- **Housing**: New student housing would be developed in the area generally bounded by the Pentland Hills and Lothian Residence Halls, Watkins Drive, Valencia Hill Drive, and Big Springs Road. The existing Canyon Crest Family Student Housing complex would be redeveloped as undergraduate student housing, and the mixed-use Bannockburn complex would be redeveloped to increase density. Development of new housing or redevelopment of existing housing sites would also include associated parking.
- **Recreation**: New recreational space, which may include turf-covered fields or basketball or volleyball courts, would be developed north of Linden Street (in the southern portion of the current family student housing complex) and interspersed with the new student housing east of the Pentland Hills Residence Halls. These locations could also include buildings that accommodate recreational or athletic programs.
- **Parking**: New parking structures could be developed at (1) the eastern edge of Parking Lot 13 (south of Big Springs Road), (2) the corner of Canyon Crest Drive and Blaine Street (currently occupied by a portion of the Family Student Housing Complex), (3) the western edge of the UCR/Riverside Sports Complex (currently a surface parking lot), (4) Parking Lot 24 (on Canyon Crest Drive, south of Linden Street), and (5) Parking Lot 1 adjacent to the freeway.
- **Open Space**: The 2005 LRDP would preserve the undeveloped southeast hills as a Natural Open Space Reserve; establish Naturalistic Open Spaces along former arroyos, Picnic Hill, and the Botanic Gardens; preserve the Carillon Mall as a Campus Landmark Open Space, and recognize Pedestrian Malls and Linear Open Spaces within the academic core. Within the Natural Open Space Reserve, sensitively sited utility projects could be developed. Within the other open spaces, in addition to utility projects, circulation improvements, such as pedestrian and bicycle paths, could also be developed.

West Campus

- **Expansion of the Academic Core**: The academic core of the campus could be extended onto the West Campus, in the area generally bounded by Martin Luther King Boulevard, the I-215/SR-60 freeway, University Avenue, and a line extending south from the western edge of University Extension (UNEX). In addition to academic buildings, administrative, student support, and library facilities could be developed.
- **Housing**: The 2005 LRDP would provide new student housing on the West Campus, in the area generally bounded by the northern edge of the West Campus (partially bordered by Everton Place), a line extending south from the western edge of UNEX (west of the expanded academic core), Martin Luther King Boulevard, and a line extending south of Cranford Avenue. This area would accommodate new Family Student Housing, which would replace the East Campus complex that would be redeveloped. Development of new housing would also include associated parking, and student support facilities such as recreation and child development center.
- **Parking**: New parking on the West Campus would be developed at the northeast corner of Martin Luther King Boulevard and Canyon Crest Drive (adjacent to the I-215/SR-60 freeway), in an area formerly used for faculty gardens; north of Martin Luther King Boulevard and east of Iowa Avenue, on land currently used as agricultural teaching and research fields; and off University Avenue and the I-215/SR-60 freeway, in conjunction with a proposed conference center.
- **Recreation**: New recreational space would also be provided on the West Campus adjacent to the new West Campus Family Student Housing, which could include turf-covered playing fields or court space, such as basketball or volleyball, and/or buildings that accommodate recreational or athletic programs.
- **Support**: Campus support facilities, including physical and central plant facilities, or housing support facilities, could be developed along the eastern edge of the West Campus (adjacent to the I-215/SR-60 freeway) and at the northwestern corner of the West Campus.
- **Open Space**: New open space would be created on the West Campus, including a new Campus Landmark Open Space, the Grove, pedestrian malls and/or linear open spaces (including a pedestrian link to the East Campus), and Neighborhood Parks, which would be developed in conjunction with new Family Student Housing.
- **Campus Reserve**: The 2005 LRDP reserves an approximately 37-acre parcel at the western edge of the West Campus (northeast of the intersection of Chicago Avenue and Martin Luther King Boulevard) as a reserve for future land uses. For the purposes of this EIR, it is assumed that no development would occur during the LRDP planning horizon and this area would remain as agricultural teaching and research fields. Any change in land use would require an LRDP amendment.
- **Agricultural Teaching and Research Fields**: The 2005 LRDP proposes to preserve the agricultural teaching and research fields on the West Campus south of Martin Luther King Boulevard. No development is assumed to occur within this area with the exception of minor support facilities such as greenhouses, storage facilities, etc.

3.6.5 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, Martin Luther King Boulevard, Chicago Avenue, Iowa Avenue, and Canyon Crest Drive. Circulation around the campus is provided via Campus Drive, supplemented by portions of the streets identified above, and several smaller internal roadways, including Citrus Drive and Eucalyptus Drive. The 2005 LRDP proposes to limit internal circulation on the East Campus on that segment of West Campus Drive between Hinderaker Hall and the Canyon Crest underpass at the I-215/SR-60 freeway to transit, service and emergency vehicles, and persons with mobility impairments. Additional roadways will be required to provide local access to portions of the West Campus.

In addition, the 2005 LRDP proposes 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 or tram service will connect major parking lots and campus destinations and link the East and West Campuses, with this system coordinated with Riverside Transit Authority routes and schedules. Concurrent with the development of the 2005 LRDP, UCR has embarked upon the development of a multi-modal transportation program to reduce use of single-occupant vehicles and encourage use of alternative transportation modes.

The existing supply of on-campus parking (of approximately 8,832 spaces) would be expanded to approximately 15,868 spaces, with commuter and visitor parking concentrated around the campus perimeter. Over time, most surface parking lots would be replaced with parking structures near major campus access points. The proposed parking supply is summarized in Table 3-5.

3.6.6 Utilities and Infrastructure

Utility and infrastructure systems on the UCR campus include the following:

- Chilled Water
- Steam Supply / Condensate Return
- Natural Gas
- Electrical
- Water
- Sanitary Sewer
- Storm Drainage

The utility infrastructure and distribution system (i.e., electricity and gas, heating and cooling, water, sanitary sewer, storm drain, and waste disposal) that serve the campus are continually evaluated and upgraded in conjunction with proposed development in order to ensure adequate facilities and services. Ongoing resource conservation programs have reduced campus water consumption, electricity and gas demand, and solid waste generation over the past decade.

Table 3-5 Projected Parking Supply

Category	*Existing (March 2001)*[a]	*Projected 2015*[b]	*Surface / Structure 2001*	*Ultimate Configuration 2015*
Commuter	6,217	8,820	Surface Lots	Structure
Visitor	626	980	Surface Lots	Structure / Surface
Special permits, disabled, special needs	307	500	Surface Lots	Structure / Surface
Campus vehicles/service/delivery	40	80	Surface Lots	Primarily Surface
Residential [c]				
Residence halls	880	1,477	Surface Lots	Primarily Surface Lots
Campus-owned apartments	494	2,940	Surface Lots	In Buildings / On Street / Surface
Family Housing	268	1,071	On Street	In Buildings / On Street / Surface
Subtotal—resident parking	*1,642*	*5,488*		
Total Parking	***8,832***	***15,868***	***Surface Lots***	***Structure / Surface***

Source: UCR 2005 LRDP

[a] Existing data taken from UCR TAPS parking inventory, 2001

[b] Future projections 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] 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 beds, one space per one and a half beds (1:1.5 = 1071)

On the East Campus, utilities and infrastructure generally are well developed. The chilled water system is currently undergoing expansion. Most of the major utility systems will require extension or expansion in order to accommodate additional development on the East Campus.

Due to limited development on the West Campus, the utility infrastructure is limited to a few locations. New development will require extension of existing systems or creation of new infrastructure for chilled water, gas, electricity, water, sewer, and storm drain. During the planning horizon of the 2005 LRDP, maintenance, expansion, and upgrades of the campus' utility infrastructure may be required.

3.7 POTENTIAL CAMPUS GROWTH SCENARIOS AND OTHER CONTINGENCIES

As discussed above, the UCR campus fully intends to accommodate the anticipated increase in student enrollment during the LRDP planning horizon (to the academic year 2015/16). Because this increase is driven by demographic and economic factors, the growth in enrollment for the campus may occur as projected or may be greater or less at a given point in time. Alternative growth scenarios could result if the population of the State did not continue to grow as currently projected or economic conditions changed, reducing the number of students seeking higher education. The LRDP has been developed using the best available information at the time of its preparation. Should growth rates exceed the current projections, the campus could develop at a faster pace and revisions to the LRDP may be

necessary to account for the change. Conversely, should growth rates drop relative to current projections, the campus could develop at a slower pace. The analysis contained in this EIR is based on the information currently available, which is essentially that the enrollment at the UCR campus is expected to increase to approximately 25,000 students by the year 2015/16.

Chapter 4 ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION

4.0 INTRODUCTION TO THE ENVIRONMENTAL ANALYSIS

Sections 4.1 through 4.15 of Chapter 4 of this EIR contain a discussion of the potential environmental effects that could result from implementation of the 2005 LRDP, including an overview of existing conditions, an analysis of the type and magnitude of individual and cumulative environmental impacts, and feasible mitigation measures that could reduce or avoid environmental impacts.

4.0.1 Scope of the Environmental Impact Analysis

The 2005 LRDP is a land use plan that guides the physical development of the campus. It is not an implementation plan; adoption of the LRDP does not constitute a commitment to any specific project, construction schedule, or funding priority. Rather, it describes the entire development program of approximately 7.1 million gsf on the campus to accommodate a future enrollment of 25,000 students by the year 2015/16. All off-campus properties owned by UCR are not addressed in this EIR. Each major building proposal during the planning horizon of the LRDP would be subject to project-specific environmental review (which may require additional documentation) and would have to be approved individually by the Chancellor, the UC Office of the President, and/or The Regents, as appropriate. Therefore, the 2005 LRDP EIR is a program-level EIR that evaluates the effects of implementation of the entire LRDP.

Potential environmental effects resulting from implementation of the LRDP are analyzed for the regular session of the academic calendar, which consist of the fall, winter, and spring quarters. The campus operates 365 days a year and includes summer sessions that consist of twelve weeks. Summer enrollment is anticipated to increase during summer session as a result of LRDP implementation, although summer enrollment would remain less than regular session enrollment. The increase in summer enrollment would affect resources that are influenced by the campus population. These resources include transportation/traffic, air quality, noise, population and housing, public services (police protection and school capacity), and recreation (refer to Table 4.0-1, below). Consequently, these resources would also be affected during summer session. However, environmental effects during the regular session would be of a greater magnitude due to the larger population on campus, such that the impacts to these resources would have their seasonal peak during the regular session. None of these resources are evaluated on an annual total basis. Traffic impacts are measured by hourly and daily vehicular movements; air quality impacts are measured in terms of daily emissions; noise is measured in terms of hourly and daily noise generated; population and housing is measured in terms of the number of students seeking residences, which is highest during the regular session; and public services and recreation are measured in terms of the demands placed on these services at any given time, and demands would be highest when there is the

largest number of students on campus, which is during the regular session. Since the greatest magnitude of potential environmental effects from implementation of the 2005 LRDP would occur during the regular session, an analysis specifically to address environmental effects during summer sessions is not warranted in this EIR and would not disclose any additional impacts not already captured by the analysis of the regular session.

The scope of the analysis of the potential environmental effects of the 2005 LRDP is described below.

2005 LRDP EIR

In accordance with Appendix G of the CEQA Guidelines, the potential environmental effects of the proposed 2005 LRDP are analyzed for the following environmental issue areas:

- Aesthetics
- Agricultural Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities

Under each of these environmental issue areas, only issues that have been identified in the Initial Study are examined in this EIR, while those that have been screened from further analysis in the Initial Study would not be examined in this document. In addition, Mandatory Findings of Significance are addressed throughout the environmental analysis, and is provided as part of the programmatic analysis of construction impacts in Sections 4.1 through 4.15 of this EIR. Mandatory Findings of Significance are defined in Appendix G of the CEQA Guidelines, and include specific impacts to biological resources, cumulative impacts, and environmental impacts that will cause substantial adverse effects on human beings, either directly or indirectly. Based upon the analysis provided in the Initial Study for the proposed project, which is provided in Appendix A of this document, impacts to Mineral Resources were determined to be "Effects Not Found to Be Significant" according to Section 15128 of the CEQA Guidelines.

The Initial Study determined that implementation of the 2005 LRDP would not result in the loss of availability of either a known mineral resource of value to the State or region or a locally important mineral resource recovery site because no mineral resources of regional or statewide importance are known to exist on the UC Riverside (UCR) campus. Further, no mineral resource recovery activities have been associated with development of the campus. The majority of the East Campus is already developed; therefore, intensification of land uses in that area would not constitute a new constraint on access to minerals, if any mineral resources are present. Development of existing agricultural teaching and research fields on the western portion of the campus would also not result in the loss of the potential availability of known mineral resources, as no resources are known on that portion of the campus. No mineral resource recovery activities occur on the UCR campus, and no such sites are delineated in the General Plan for the County or City of Riverside or the University Community Plan, which covers the area around the campus. Consequently, the Initial Study concluded that implementation of the 2005 LRDP would not result in any impacts to mineral resource recovery activities, nor result in the loss of availability of any locally important mineral recovery sites. No additional analysis of this issue area is required in this EIR.

4.0.2 Format of the Environmental Analysis

Environmental Setting / Definition of the Baseline

According to Section 15125 of the CEQA Guidelines, an EIR must include a description of the existing physical environmental conditions in the vicinity of the project to provide the "baseline condition" against which project-related impacts are compared. Normally, the baseline condition is the physical condition that exists when the Notice of Preparation (NOP) is published. The NOP for the LRDP EIR was published in December 2001 and the baseline year used for this EIR is academic year 2001/02.

For analytical purposes, impacts associated with implementation of the 2005 LRDP are derived by comparing the existing baseline environmental setting on campus with the net amount of new development that would occur on campus as a result of the 2005 LRDP. The two fundamental components of the existing baseline environmental setting that are used to derive future impacts resulting from the 2005 LRDP are the campus population and the built environment. Impacts on the campus that are population-based include transportation/traffic, air quality, noise, population and housing, public services (police protection and school capacity), recreation and utilities. For purposes of evaluating impacts related to physical development, the baseline condition for the environmental setting on campus includes all existing development occupied since Fall 2001. Impacts related to physical development include aesthetics, agricultural resources, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, utilities, and public services (fire protection). The environmental effects of the existing buildings and recent projects that comprise the baseline condition for the physical development of the campus, which totals approximately 4.7 million gsf, have already been analyzed and disclosed in accordance with CEQA. Mitigation measures adopted in conjunction with all former projects remain legally binding and are included for purposes of establishing the environmental baseline for this EIR.

Regulatory Framework

The Regulatory Framework provides a summary of regulations, plans, policies, and laws that are relevant to each issue area.

Project Impacts and Mitigation

This section is further divided into the following subsections, as described below.

Methodology

This subsection identifies the analytic method used to analyze potential environmental impacts.

Thresholds of Significance

Thresholds of significance are criteria used to determine whether potential environmental effects are significant. The thresholds of significance used in this analysis were primarily based upon Appendix G of the CEQA Guidelines; however, in some cases, standards were developed specifically for this analysis or reflect those used by the University in other environmental analyses. This subsection defines the type, amount, and/or extent of impact that would be considered a significant adverse change in the environment. Some thresholds (such as air quality, traffic, and noise) are quantitative, while others, such as visual quality, are qualitative. The thresholds are intended to assist the reader in understanding how and why the EIR reaches a conclusion that an impact is significant or less than significant.

The thresholds of significance are provided both in the "Thresholds of Significance" section and immediately before the individual impact statement for ease of correlation.

Effects Not Found to Be Significant

Certain environmental impacts were determined to be "Effects Not Found to Be Significant" based upon the analysis provided in the Initial Study for the proposed project. These impacts are summarized in this subsection based upon the analysis provided in the Initial Study for the proposed project, which is included as Appendix A to this EIR.

Impacts and Mitigation Measures

Impact Statement

This subsection describes the potential environmental impacts that would result from implementation of the entire 2005 LRDP. Each impact is summarized in an "impact statement." This impact statement is followed by a more detailed discussion of the potential impact and the nature of the impact before mitigation or inclusion of any LRDP Planning Strategies and existing Programs or Practices. If no impact would result, the discussion concludes with a statement to that effect.

The analysis of environmental impacts considers both the construction and operational phases associated with implementation of the 2005 LRDP, as appropriate for individual impacts. As required by Section

15126.2(a) of the CEQA Guidelines, direct, indirect, short-term, long-term, on-campus, and/or off-campus impacts are addressed, as appropriate, for the environmental issue area being analyzed.

LRDP Planning Strategies/Programs & Practices

After the Impact Statement and more detailed description of the impact, where relevant, LRDP Planning Strategies and existing Programs & Practices that may reduce or avoid the impact are identified.

The 2005 LRDP articulates a range of LRDP Planning Strategies (PSs) related to land use, open space, campus and community, transportation, conservation and development strategy, intended to guide future development on the UCR campus. Because these Planning Strategies have the potential to reduce or avoid some environmental impacts, relevant strategies are noted for individual impacts. Similarly, existing Programs & Practices (PPs) that have already been implemented by the campus also have the potential to reduce impacts, and are discussed to the extent applicable. If PSs or PPs are identified for that impact, the significance of the impact is noted, assuming adherence to the LRDP Planning Strategies and continued implementation of the existing Programs & Practices. If the combined effect of PSs and PPs would reduce impacts to a less-than-significant level, the impact discussion concludes with a statement to that effect. For some impacts, even without inclusion of any PSs or PPs, the impact could be less than significant, and will be so noted.

If inclusion of PSs and PPs do not reduce impacts to a less-than-significant level (or if no relevant PSs or PPs are identified) then implementation of the 2005 LRDP would result in a significant impact. Feasible mitigation measures (MMs) that could reduce the severity of the impact are then discussed. The potential for implementation of MM(s) to reduce the impact are identified. The analysis concludes with a determination of whether the impact, with implementation of feasible MM(s), would be less than significant, or would remain significant and unavoidable.

Basis for LRDP Impacts

As noted above, both operational and construction impacts are considered, as appropriate, for each impact. For construction impacts, the potential effects associated with construction of individual buildings and facilities are described.

For operational impacts, the analysis of impacts is generally based upon one of three factors: (1) population (e.g., an increase in the campus population); (2) quantity of development (e.g., an increase in the amount of building space); or (3) location of development. Table 4.0-1 summarizes the factors that generally determine impacts for each environmental resource analyzed in this EIR.

The evaluation of impacts based on population generated by the proposed project considers increased demands or effects on resources that would result from an increased population. Based on the UCR 2005 LRDP, those impacts that result from an increase in the campus population are based upon an increase in student enrollment to 25,000 students and an overall increase in the campus population of approximately 17,899 persons. This would be the case for many utilities, whose demands are generated on a per person basis.

The evaluation of impacts based upon quantity of future development considers how much new development would occur, and this approach is used where impacts are not related to the precise location of development on the campus. Those impacts that result are based on an increase of approximately 7.1 million gross square feet of new occupied building space. For instance, seismic risks from new development consider quantity of future development.

Table 4.0-1 Summary of Factors Determining Level of Environmental Impact

	Principal Factor in Determining Impacts		
Resource	*Population*	*Quantity of Development*	*Location of Development*
Aesthetics		●	●
Agricultural Resources			●
Air Quality	●	●	●
Biological Resources			●
Cultural Resources			●
Geologic Resources		●	●
Hazards		●	●
Hydrology		●	●
Land Use		●	●
Noise	●		●
Population and Housing	●		
Public Services	●	●	
Recreation	●		●
Transportation/Traffic	●	●	●
Utilities	●	●	

Those impacts that result from the location of future development are based upon infill development (in those areas where existing land use is not proposed to change), changes in land use (as compared to existing conditions), and redevelopment of some existing sites (where more intense development is anticipated). By comparing existing land use to proposed future land uses, implementation of the 2005 LRDP is evaluated to determine whether future development would result in adverse effects to resources existing in the affected areas. For instance, effects on viewsheds are based on where development would occur in relation to public vantage points. The following summarizes the patterns or land use that would result from implementation of the 2005 LRDP:

Land Use Patterns

Based upon the Land Use Plan (Figure 3-6) included in the 2005 LRDP, land use in the following areas of the campus could change (compared to existing conditions), as discussed in Section 3.6.4 (Land Use) in the Project Description.

Characterization of LRDP Impacts

The Draft EIR uses the following impact statements to describe the level of significance of impacts identified during the course of the environmental analysis:

- *No impact would result*—Impact is negligible or nonexistent.
- *This impact would be less than significant*—Impact does not exceed the defined threshold(s) of significance and does not require the inclusion of any Mitigation Measure(s), 2005 LRDP Planning Strategies, or existing Programs and Practices.
- *With the implementation of the identified LRDP Planning Strategies and/or Programs & Practices, this impact would be reduced to a less-than-significant level*—Impact may exceed the defined threshold(s) of significance prior to implementation of 2005 LRDP Planning Strategies and existing Programs & Practices. However, the impacts can be avoided or reduced to a less-than-significant level through the implementation of 2005 LRDP Planning Strategies and/or continued implementation of existing Programs & Practices. Compliance with 2005 LRDP Planning Strategies and Programs & Practices will be monitored through the Mitigation Monitoring and Reporting Program.
- *With the inclusion of the identified Mitigation Measure(s), this potentially significant impact would be reduced to a less-than-significant level*—Impact exceeds the defined threshold(s) of significance prior to mitigation. However, the impacts can be eliminated or reduced to a less-than-significant level through the implementation of feasible mitigation measures (and/or 2005 LRDP Planning Strategies and Programs & Practices, if also identified).
- *This impact would be significant and unavoidable*—Impact exceeds the defined threshold(s) of significance and cannot be eliminated or reduced to a less-than-significant level even with the implementation of feasible mitigation measures (and 2005 LRDP Planning Strategies and Programs & Practices, if also identified).

A "significant effect" is defined by Section 15382 of the CEQA Guidelines as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself shall not be considered a significant effect on the environment…[but] may be considered in determining whether the physical change is significant."

Each impact discussion is separately numbered and includes a brief impact statement that summarizes the subject of the analysis. This format is designed to assist the reader in quickly identifying the subject of the impact analyses and for use in Table 2-1 (Summary of Environmental Effects and Mitigation Measures), which forms the basis of the Mitigation Monitoring and Reporting Program. Impact numbers and statements are not provided for Effects Not Found to Be Significant, as they are less-than-significant impacts and do not require mitigation or additional analysis in this EIR. Accordingly, they are not

monitored as part of the Mitigation Monitoring and Reporting Program, and no impact numbers or statements are necessary.

Cumulative Impacts

CEQA requires that EIRs discuss cumulative impacts, in addition to project-specific impacts. In accordance with CEQA, the discussion of cumulative impacts must reflect the severity of the impacts and the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. Further, the discussion is guided by the standards of practicality and reasonableness (CEQA Guidelines Section 15130(b)). According to Section 15355 of the CEQA Guidelines:

> "Cumulative impacts" refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
>
> (a) The individual effects may be changes resulting from a single project or a number of separate projects.
>
> (b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

Section 15130(a)(1) of the CEQA Guidelines further states that a "cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts."

Section 15130(a) of the CEQA Guidelines also requires that EIRs discuss the cumulative impacts of a project when the project's incremental effect is cumulatively considerable. Where a lead agency is examining a project with an incremental effect that is not cumulatively considerable, it need not consider the effect significant but shall briefly describe the basis for its conclusion. As further clarified by Section 15065 of the CEQA Guidelines, "cumulatively considerable" means that the incremental effects of an individual project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. If the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, 15130(a)(2) of the CEQA Guidelines requires a brief discussion in the EIR of why the cumulative impact is not significant and is not discussed in further detail. Section 15130(a)(3) of the CEQA Guidelines requires supporting analysis in the EIR if a determination is made that a project's contribution to a significant cumulative impact is rendered less than cumulatively considerable and, therefore, is not significant. The discussion of cumulative impacts in the EIR focuses on whether the contribution of the 2005 LRDP to environmental impacts is cumulatively considerable.

The fact that a cumulative impact is significant on the whole does not necessarily mean that the project-related contribution to that impact is significant as well. Instead, under CEQA, a project-related contribution to a significant cumulative impact is only significant if the contribution is cumulatively considerable. To support each significance conclusion, the 2005 LRDP EIR provides a detailed cumulative impact analysis, and where project-specific impacts (that together with the effects of other

pending projects could result in cumulatively significant impacts) have been identified, these potential impacts are documented.

The geographic scope of the cumulative impact analysis varies depending upon the specific environmental issue area being analyzed. For example, the scope of the cumulative impact analysis for aesthetics includes the area that comprises the viewshed that includes UCR and the on-campus viewshed, whereas the scope of the cumulative impact analysis for hydrology and water quality includes the Santa Ana River Watershed. In addition to describing the geographic scope of analysis, where appropriate, each section also designates the cumulative context within the designated geographic area, which relates to the amount and type of growth that is anticipated to occur within the geographic area. For most sections, this growth is based upon regional growth forecasts, as described below. Where appropriate to the analysis in question, such as traffic, cumulative impacts are also assessed with reference to a list of off-campus "related projects," as described by CEQA Guidelines Section 15130(b).

A variety of off-campus, related projects are within the immediate vicinity of the campus. Table 4.0-2 (Off-Campus Related Projects) includes those related projects that are proposed, under construction, or approved but not yet built. The location of these related projects are shown in Figure 4.0-1.

Growth projections provide an overview of potential growth in the region up through year 2025. Table 4.0-3 through Table 4.0-5 identify growth trends for population, housing, and employment in the region up through year 2025.

Table 4.0-2 Off-Campus Projects

No.	*Description*	*Status*	*Project Features*
1	University Village		
	Building K		
	Retail	Approved	16,306 gsf
	Office		34,958 gsf
	Building E		
	Restaurant	Construction	11,334 gsf
	Retail	completed	8,650 gsf
	Office		13,261 gsf
	Building F/G		
	Restaurant	Approved	10,050 gsf
	Retail		13,974 gsf
	Student Housing	Proposed	525 beds
	Subtotal: Restaurant		*21,384* gsf
	Subtotal: Retail		*38,930* gsf
	Subtotal: Office		*48,219* gsf
2	Restaurant at southeast corner of Spruce and Chicago	Complete	7,000 gsf
3	Apartments at southwest corner of Iowa and Linden	Complete	752 DU
4	Residential Development at southeast corner of Chicago and Central	Complete	120 DU
5	Residential Development at intersection of Central and I-215	Approved	220 DU
6	City Flood Control Improvements	Pending	To be determined

Source: City of Riverside 2002
All area presented in square feet unless identified as otherwise.

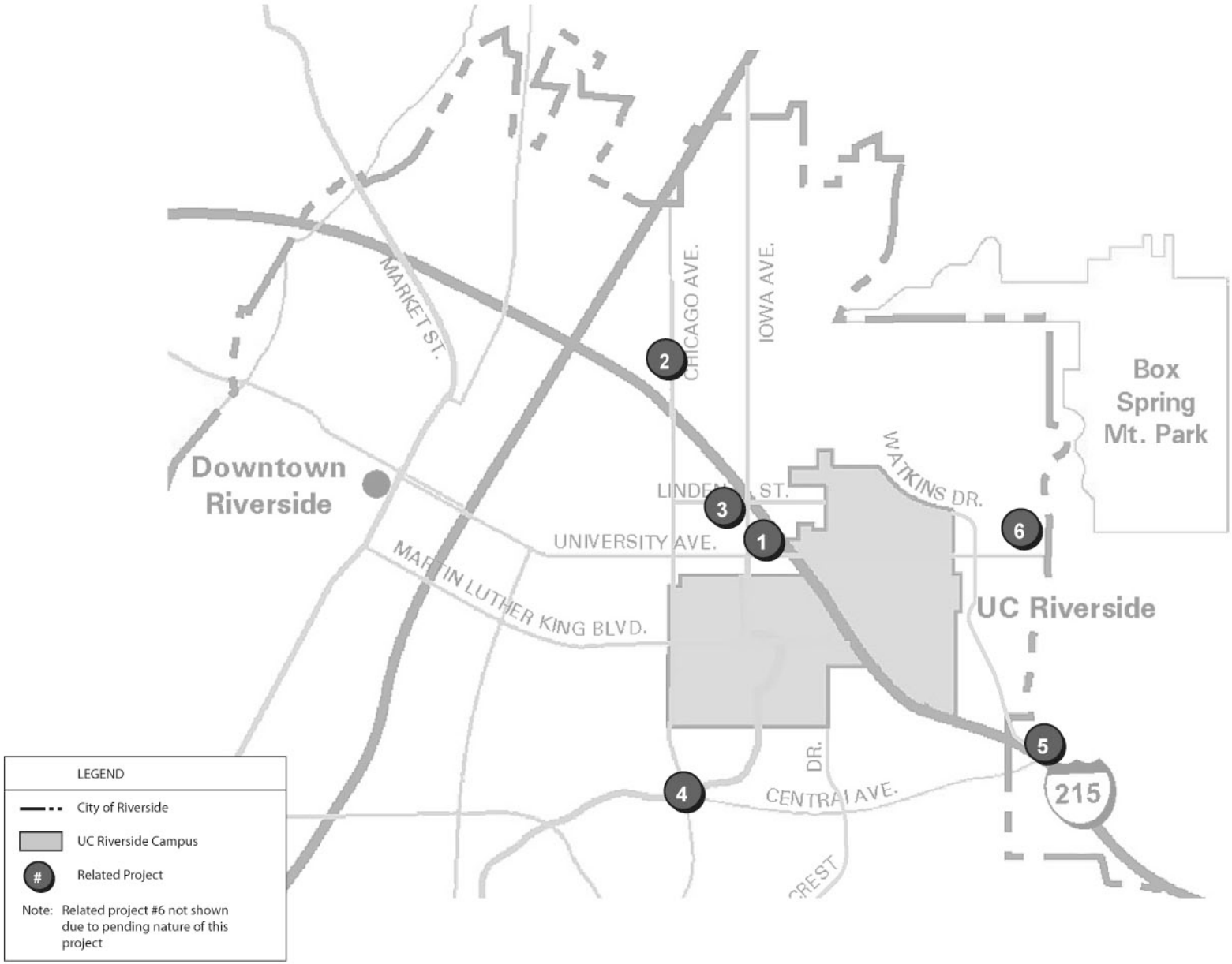

FIGURE **4.0-1**

Off-Campus Related Projects

Not to Scale

10537-00

Source: City of Riverside, 2002

UC Riverside

EIP ASSOCIATES

Reference

This section identifies sources relied upon for each environmental topic area analyzed in this document (Sections 4.1 through 4.15). In addition, a comprehensive list of sources referenced in this EIR is also provided in Chapter 8 (References).

Table 4.0-3 Regional Growth Projections—Population

Geographic Area	*2000/01*	*2010*	*2015*	*2025*
Riverside County	1,551,265	1,965,287	2,221,925	2,735,278
Western Riverside County	848,413	1,099,883	N/A	1,461,388
City of Riverside	255,166	302,507	N/a	340,328
UC Riverside campus and areas immediately adjacent	35,067	40,751	42,749	47,360

Source: County of Riverside Final MSHCP EIR and SCAG Model Socio-Economic Data (SED)

Table 4.0-4 Regional Growth Projections—Housing

Geographic Area	*2000/01*	*2010*	*2015*	*2025*
Riverside County	504,507	631,676	720,452	898,030
Western Riverside County	285,514	343,514	N/A	466,845
City of Riverside	85,631	93,245	N/A	109,803
UC Riverside campus and areas immediately adjacent	12,446	14,051	14,931	16,951

Source: County of Riverside Final MSHCP EIR and SCAG Model Socio-Economic Data (SED)

Table 4.0-5 Regional Growth Projections—Employment

Geographic Area	*2000/01*	*2010*	*2015*	*2025*
Riverside County	534,671	759,819	835,013	985,424
Western Riverside County	301,501	466,170	N/A	608,888
City of Riverside	125,938	182,943	N/A	232,326
UC Riverside campus and areas immediately adjacent	11,570	15,054	16,373	18,235

Source: County of Riverside Final MSHCP EIR and SCAG Model Socio-Economic Data (SED)

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 2005 LRDP. Because the 2005 LRDP is a land use plan and does not propose any specific projects, the design of individual buildings or facilities that may be developed during the LRDP planning horizon is not known at this time; therefore, this section analyzes the general effects of development on the 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. This section is organized to reflect the land uses proposed in the 2005 LRDP, which is discussed in more detail in Section 4.9 (Land Use). Refer also to Section 4.4 (Biological Resources) for discussion of natural areas located within the campus.

Data used in the preparation of this section were taken from various sources, including site visits, local community plans and specific plans, previous environmental documentation prepared for the UCR campus, and other campus data sources. Bibliographic entries for reference material are provided in Section 4.1.5 (References) of this section.

Written material in response to the Notice of Preparation and comments raised at the Public Scoping Meeting on January 8, 2002 included several concerns related to aesthetics, including loss of open space and landscaped areas and the need to provide a buffer for housing and parking along those campus edges that are adjacent to single family residential land uses. The Notice of Preparation, those comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.1.2 Existing Conditions

Campus Setting

UCR is located in the City of Riverside, approximately three miles east of downtown, in western Riverside County. The approximately 1,112-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.

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.

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 campus, nearest to the Box Springs Mountains is only sparsely developed, with scattered residential development interspersed with grasslands and coastal sage scrub.

On clear days, the most prominent visual feature in the vicinity of the campus is the Box Springs Mountains, which are the 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 campus, approximately 2,200 to 2,800 feet east of 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 one mile to the north of the campus and approximately 1,700 feet within two miles east of 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, when atmospheric conditions permit.

Visual Character of the Campus

As noted above, the campus is generally divided into two parts, which are separated by the I-215/SR-60 freeway. With the majority of buildings and facilities located east of the freeway, and most of the undeveloped land located west of the freeway, the two portions of the campus have different visual characteristics.

The following discussion summarizes visual character of the two portions of the campus, with particular emphasis on visual conditions along campus edges. Fifteen photographs were taken of the campus; a key to the locations from which they were taken is shown in Figure 4.1-1, and the photographs are shown in Figures 4.1-2 through 4.1-9.

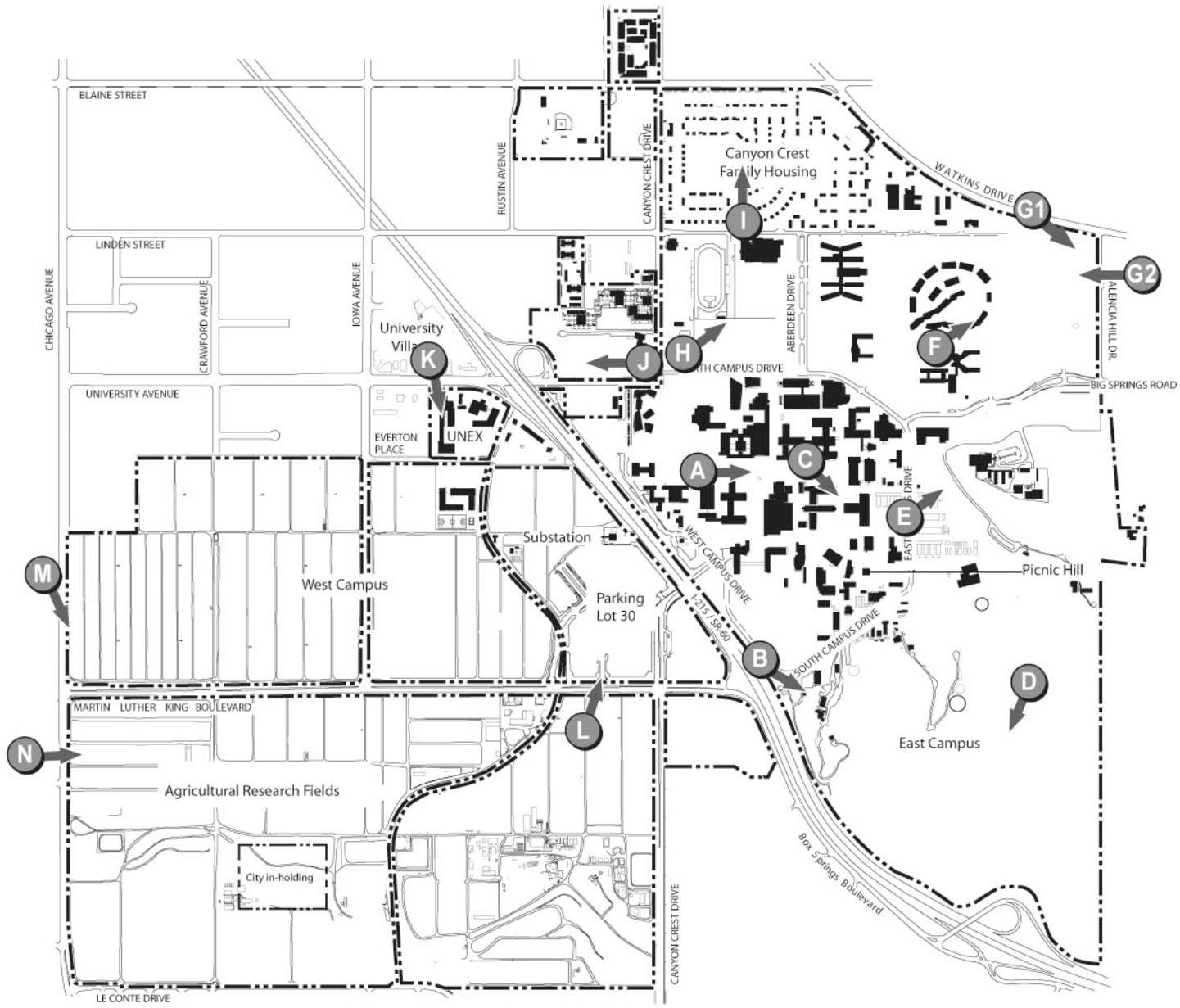

FIGURE **4.1-1**

Key to View Locations

Scale: 1" = 1,400'

10537-00

Source: EIP Associates, 2003; UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

Photo A: Carillon Mall

Photo B: Surface Parking along Campus Drive South

FIGURE **4.1-2**
Photos A and B

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo C: Spieth Hall

Photo D: Southeastern Hills

FIGURE **4.1-3**
Photos C and D

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo E: Research Greenhouse, East of Campus Drive East

Photo F: Pentland Hills Residence Halls

FIGURE **4.1-4**
Photos E and F

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo G1: Northeast corner of the East Campus

Photo G2: Eastern portion of campus from Valencia Hills Drive

FIGURE **4.1-5**
Photos G1 and G2

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo H: Lower Intramural Fields

Photo I: Canyon Crest Family Student Housing

FIGURE **4.1-6**
Photos H and I

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo J: University Avenue, West of Canyon Crest Drive

Photo K: UNEX (University Extension)

FIGURE **4.1-7**
Photos J and K

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo L: Parking Lot 30 (north of Martin Luther King Boulevard) looking east across the freeway to the Humanities and Social Sciences Tower

Photo M: West Campus edge, North of Martin Luther King Boulevard

FIGURE **4.1-8**
Photos L and M

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

Photo N: West Campus edge on Chicago Avenue, (south of Martin Luther King Boulevard) looking towards the East Campus

FIGURE **4.1-9**
Photo N

10537-00

***Source*:** EIP Associates, 2003

UC Riverside

EIP ASSOCIATES

East Campus

The approximately 600.8 acres of land east of the I-215/SR-60 freeway contains the academic core of the campus and most support uses, including student housing, recreation, and administration. The academic core is generally comprised of mostly two and three-story buildings, separated by landscaped courtyards planted with mature trees and landscaping. The Carillon Mall is the central open space in the academic core, with large turf-covered areas, mature trees generally at the edges of the mall, and the Carillon Tower as the centerpiece (Photo A). At the edges of the academic core, newer buildings of four and five stories in height have been constructed at some locations. The edges of the academic core are generally characterized by landscaped areas and courtyards, surface parking lots, and service driveways (Photo B). The academic core is generally defined by Campus Drive, which provides access to parking lots and service driveways at the perimeter of the core. Because of the generally flat topography, the similar scale of buildings, and the presence of mature trees, the visual character of most of the academic core around the Carillon Mall is that of a low-rise, densely landscaped campus (Photo C).

Outside of Campus Drive, the visual character of the East Campus can be described at three general locations: south of South Campus Drive, east of East Campus Drive, and north of North Campus Drive. South of South Campus Drive, the topography gradually slopes up to the southeast hills, the largest undeveloped area of the campus, which remains in a relatively natural state, with grasslands, scrub, and granitic outcrops (Photo D). Between the hills and South Campus Drive, various one- and two-story buildings, including several research greenhouses, are separated by service driveways, landscaping, and a small orchard. As South Campus Drive turns northward and becomes East Campus Drive, research greenhouses are the predominant land use (Photo E). Further east, the topography becomes more varied with natural areas (including the Botanical Gardens and associated arroyo), citrus orchards, several research buildings, and surface parking. North of Big Springs Road (and east of Aberdeen Drive), student housing is the predominant use, separated by surface parking lots and landscaped areas (Photo F). The northeastern edge of campus includes a large expanse of undeveloped open space (Photo G1), the low-rise Child Development Center, and the Facilities Management Corporation Yard. North of North Campus Drive, the student recreation complex, lower intramural fields, and the track stadium give the impression of a large expanse of open space, particularly the expanse of grass on the intramural fields (Photo H). North of Linden Street, the Canyon Crest Family Housing complex area is located, with small one-story buildings separated by generous lawns, surface parking, and mature trees (Photo I). West of Canyon Crest Drive, three campus-owned parcels comprise the northeastern portion of the East Campus, including the Stonehaven Apartments (a three-story apartment complex located at Canyon Crest Drive and Blaine Street), the Riverside Sports Complex (a sports field complex located south of Blaine Street and west of Canyon Crest), and the Bannockburn complex (a three-story mixed-use building) and adjacent uses including the Housing Services Building, Watkins House, and the University Plaza Apartments on Linden Street. Along University Avenue, between Canyon Crest Drive and the I-215/SR-60 freeway, the northern edge of the street is landscaped with lawn and mature trees (Photo J).

Edge conditions around the East Campus vary considerably. The southeastern hills are largely undeveloped (except for utility and service roads) and generally fronted by South Campus Drive, Watkins Drive, and the I-215/SR-60 freeway. The eastern boundary of the campus is occupied by citrus orchards (generally only visible from single-family homes along the campus boundary), surface parking (Lot No. 13), mostly undeveloped open space (along Valencia Hill Drive and a portion of Watkins Drive) (Photo G2) the Canyon Crest Family Housing (along Blaine Street), the Stonehaven and University Plaza apartments (along Linden and Blaine Streets) and the Bannockburn complex (along Canyon Crest Drive).

West Campus

The West Campus (511.3 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 UNEX building and associated surface parking and parking structure occupy the northwestern corner of the West Campus on University Avenue (Photo K). 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 large surface parking Lot (Lot No. 30) is located north of Martin Luther King Boulevard, west of Canyon Crest Drive (Photo L). The remainder of the West Campus north Martin Luther King Boulevard 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 Martin Luther King Boulevard is also occupied by agricultural research and teaching fields and related support facilities.

With the exception of UNEX, Human Resources, Highlander Hall, and Parking Lot 30, the edges of the West Campus are occupied by row crops, citrus orchards, and related agricultural support facilities. At some locations, views across the West Campus are generally screened by the presence of citrus orchards (Photo M), while at other locations, low-growing row crops permit expansive views of the West Campus (Photo N).

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 (e.g., Carillon Mall), rather than views available from private residences.

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.

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 the 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 Bernardinos, are available from various locations on campus. However, from many vantage points on the East Campus, these views are partially blocked by buildings and mature trees and landscaping. Panoramic views of the adjacent mountains are available from some locations in the Carillon Mall and the Lower Intramural Fields (east of Canyon Crest Drive), although views in some portions of the Carillon Mall are limited by the large number of mature trees. Views of the adjacent mountains are generally available from locations on the West Campus; however, with the exception of Parking Lot 30, few of these locations are accessible, as the agricultural teaching and research fields are fenced to preclude public access. Since Parking Lot 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.

Panoramic views of the campus, the adjacent mountains, and the City of Riverside are available from the on-campus southeast hills. However, because of the relatively remote location, limited access (pedestrian only), and lack of development in this area, this location is not considered a key vantage point for observing scenic vistas, and the public generally does not experience these view. Thus views from the southeast hills are not considered a scenic vista for the purposes of this EIR.

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. Along Canyon Crest Drive (north of the freeway), views of the Box Springs Mountains are available at some locations. Along Blaine Street at the northern edge of campus, views of the Box Springs Mountains are available to the east, but are intermittent to the south, due to landscaping and structures in the Canyon Crest Family Housing complex. At the northeastern edge of campus, views of the Box Springs Mountains and views across campus are available along Watkins Drive (where it borders the campus) due to the undeveloped open space at this location on the campus. Along Valencia Hill Drive, views of the campus and across the campus (to Mt. Rubidoux on clear days) are generally available. South of Big Springs Road, views of the campus and across the campus are mostly screened by residences along the campus edge, although some limited views are available from the residences in that area. Further south, views of the southeastern hills are available along Watkins Drive (south of Picacho Drive) and from the residences along the street. Views of the southeastern hills are also available along the I-215/SR-60 freeway. Views of the campus from the I-215/SR-60 freeway are mostly limited by landscaping adjacent to the freeway.

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 (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.

Light and Glare

In general, the primary sources of light and glare on the UCR campus include recreation facilities (when those facilities are in use at night) and surface parking lots. The Riverside Sports Complex on Blaine Street west of Canyon Crest) contains lighted fields, including a competitive baseball field and a surface parking lot. The Student Recreation Center complex and the adjacent intramural fields and track stadium provide lighting on the fields, the tennis courts, and at the track stadium to extend hours of use. Surface parking lots are also sources of light and glare, including those located around the campus perimeter (Lot 30 at Canyon Crest Drive and Martin Luther King Boulevard, Lot 13 on Big Springs Road, and Lot 24 on Canyon Crest Drive). Light and glare from parking lots is associated with light standards (used to illuminate the lot) and from headlights on vehicles entering and exiting the lots. In addition, building lights and night lighting of campus walkways also produce light and glare; however, in many instances the location of the light source (interior to the campus) or the presence of landscaping and other structures reduce the spillover of light and glare from those sources.

Sources of glare include reflective surfaces such as pavement, building exteriors, and glass. Glare into buildings form the reflected sunlight off of adjacent buildings is generally minimized on the UCR campus due to the generally low density of development, the relatively low average height of buildings (e.g., one to four stories), the extent of mature trees and landscaping, and the limited use of reflective glass surfaces in existing buildings.

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, Iowa Avenue, and some sections of Blaine Street.

The UCR campus utilizes a design review process for all campus development projects prior to approval. This design process is performed 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. The campus design review process ensures that

the physical planning objectives described in Section 3.4.2 (Physical Objectives) and the LRFP Planning Strategies described in Section 3.5 (LRDP Planning Strategies) of this EIR are incorporated into each project proposal to the maximum extent feasible.

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 Project Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the 2005 LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects or the location of those projects. Therefore, this EIR evaluates aesthetic impacts based upon probable location of future development, based on the land use plan included in the 2005 LRDP. By comparing existing land uses to proposed future land uses, implementation of the 2005 LRDP is evaluated to determine whether future development would result in adverse effects to scenic vistas, damage to scenic resources, degradation of visual character of the campus and surroundings, and new sources of light and glare that would adversely affect day or nighttime views. Site visits by EIP personnel during June and July 2002 and supplemental visits in May 2003 documented the existing visual character and context of the campus.

For the purposes of this analysis, a scenic vista is considered a panoramic view, with visual access to a large geographic area that extends into the distance, from a publicly accessible viewpoint, such as public gathering places. A substantial adverse effect on a scenic vista would include the substantial obstruction of a panoramic view from a publicly accessible gathering place. Views from private property, including residences, are not considered scenic vistas for the purposes of this analysis. (Changes to those views are addressed as a change in visual character in Impact 4.1-2 below.) Analysis of potential damage to scenic resources, including trees, rock outcroppings, and historic buildings, is evaluated for those areas within or adjacent to a designated State scenic highway. 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, development of currently undeveloped land, and the removal of a substantial number of mature trees. Visual change that is compatible with existing patterns of development would not be considered to constitute a significant impact. Potential effects from new sources of light and glare are evaluated in terms of the potential for daytime glare (from reflective surfaces, such as glass) or from night lighting (and associated glare) to adversely affect views from land uses adjacent to the campus.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on aesthetics if it would result in any of the following:

- Have a substantial adverse effect on a scenic vista
- 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
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

Effects Not Found to Be Significant

The campus is bisected by the I-215/SR-60 freeway, and generally bounded by University Avenue, Canyon Crest Drive, Blaine Street, Watkins Drive, Valencia Hill Drive, Le Conte Drive and Chicago Avenue, none of which are officially designated or identified as eligible for designation as a State scenic highway (California Department of Transportation, Office of State Landscape Architecture, list of California Scenic Routes). As such, development associated with implementation of the 2005 LRDP would not have a significant impact on any State scenic highways. Although the southeast hills include rock outcroppings, the 2005 LRDP proposes to retain that area of the campus as an Open Space Reserve and no impacts to existing rock outcroppings are anticipated. Therefore, the Initial Study determined that no impacts to scenic resources would result from implementation of the 2005 LRDP, and no additional analysis is required in this EIR. Impact 4.1-2 analyzes impacts to on-campus landscaping, including trees, and impacts to historic resources are addressed in Impacts 4.5-1 and 4.5-2 of Section 4.5 (Cultural Resources).

Impacts and Mitigation

Threshold	Would the project have a substantial adverse effect on a scenic vista?

Impact 4.1-1 **Implementation of the 2005 LRDP would not have a substantial adverse effect on a scenic vista. With implementation of the relevant 2005 LRDP Planning Strategy and Program & Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of approximately 7.1 million gsf of new buildings and facilities that have the potential to partially block or obstruct panoramic views from the Carillon Mall and the Lower Intramural Fields, which are publicly-accessible gathering places on the UCR campus that have access to scenic vistas.

As noted in the setting, panoramic views are available on clear days from the southeast hills, including views of the Box Springs Mountains, the UCR campus, the City of Riverside, Mount Rubidoux, and the San Bernardino Mountains (atmospheric conditions permitting). However, because of the relatively remote location, limited access (pedestrian only), and lack of development in this area, this location is not considered a key vantage point for observing scenic vistas. On the West Campus, panoramic views of the West Campus and the adjacent mountains are available from Parking Lot 30 and at locations within the agricultural teaching and research fields. 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. These locations on the West Campus are also not readily accessible as key vantage points for observing scenic vistas.

During the planning horizon of the UCR 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including the following strategy relevant to preservation of scenic vistas:

PS Open Space 5 — *Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*

In addition, continued implementation of the following existing campus Program & Practice (PP) would also promote preservation of scenic vistas:

PP 4.1-1 — *The campus shall provide design architects with the 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).)

Preservation of the Carillon Mall as a Campus Landmark Open Space would preserve panoramic views at locations within the mall. Although infill development of some building sites around the edges of the mall or replacement of existing structures may occur during the LRDP Planning Horizon, continued implementation of PP 4.1-1 would assure that potential effects associated with panoramic views from within the Mall are considered in the siting and design of future building projects.

Implementation of the 2005 LRDP would result in expansion of the academic core to the area currently occupied by the Lower Intramural Fields. Development of new academic buildings at this location could partially block views of the adjacent mountains at some locations. The 2005 LRDP proposes to extend the system of landscaped courtyards and pedestrian malls into this area of the campus and preserve North Campus Drive as a linear corridor for service, pedestrian, and bicycle movement. Figure 4.1-10 shows the proposed Open Space Framework. As such, panoramic views would continue to be available along the adjacent section of North Campus Drive and at some locations within the landscaped courtyards and/or pedestrian malls that would separate new structures. The 2005 LRDP also proposes to develop new recreational fields north of Linden Street (at the southern edge of the existing Canyon Crest Family Student Housing complex). It is anticipated that panoramic views of the nearby mountains would become available from this location. Continued implementation of PP 4.1-1 would ensure that potential effects to scenic vistas are considered in the siting and design of future building projects.

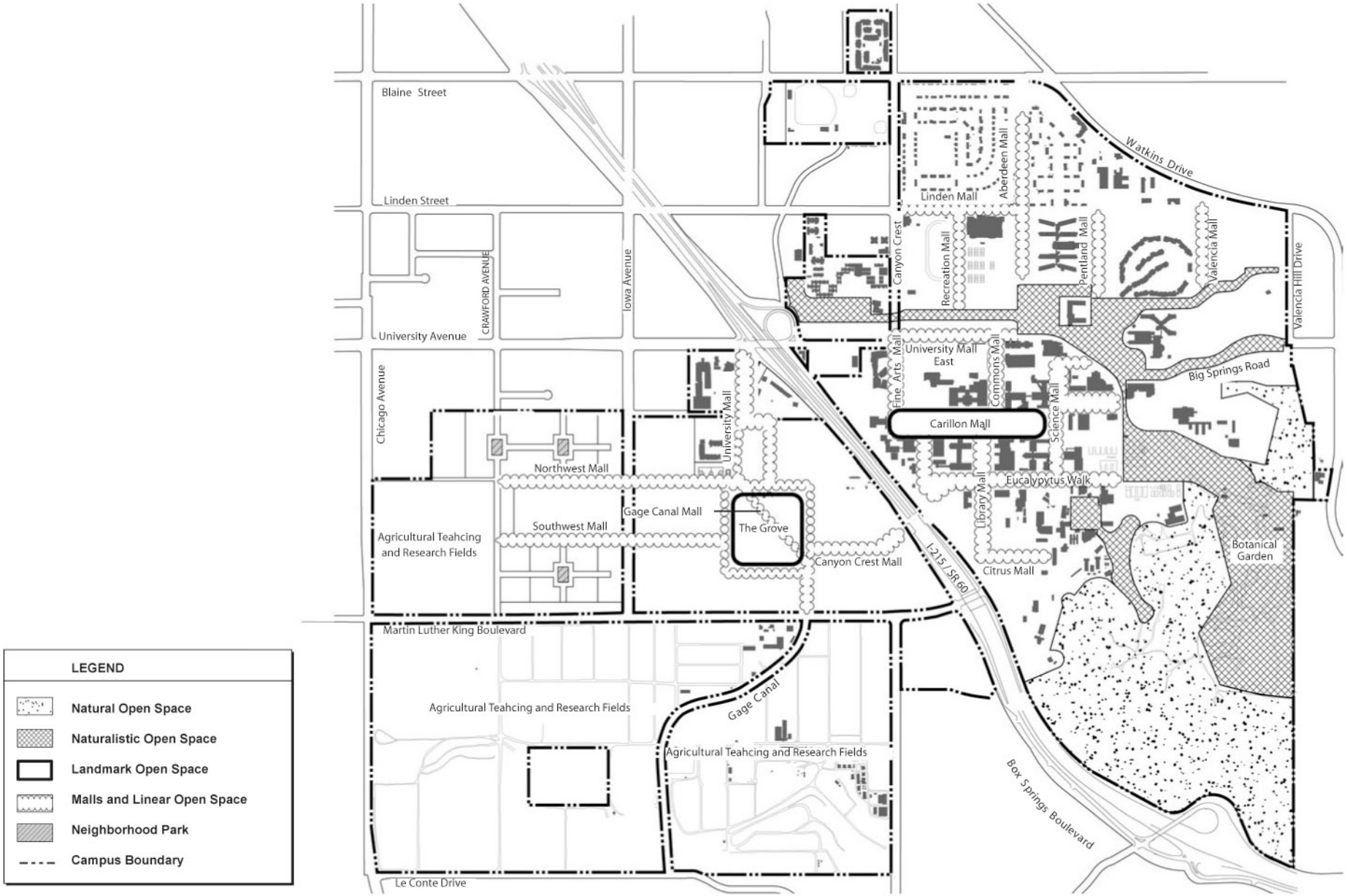

FIGURE **4.1-10**

Open Space Framework Elements

Scale: 1" = 1400'

Source: UC Riverside LRDP, 2005

UC Riverside

10537-00

EIP ASSOCIATES

With implementation of the identified LRDP Planning Strategy and continued implementation of the existing Program & Practice, implementation of the 2005 LRDP would have not have a substantial adverse impact on a scenic vista, and this impact would be *less than significant*.

Threshold:	Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

Impact 4.1-2 **Implementation of the 2005 LRDP would not substantially degrade the visual character or quality of the campus and the immediate surrounding area. With implementation of the relevant 2005 LRDP Planning Strategies and Programs & Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of 7.1 million gsf of new buildings and facilities, which would convert undeveloped open space and agricultural teaching and research fields into the sites of academic buildings and related support facilities, replace existing structures, and result in the removal of existing landscaping and mature trees. The development of these new structures and facilities could substantially degrade the visual character or quality at locations subject to new development and change the visual character of the campus and adjacent locations.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies are relevant to preservation or enhancement of the visual character or quality of the campus and the surrounding area:

PS Land Use 1 *Achieve academic core densities of 1.0 FAR or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses.*

PS Land Use 2 *In order to achieve 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 Land Use 3 *Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*

PS Open Space 1 *Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve*[6]*, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*

PS Open Space 2 *Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be*

[6] The 2005 LRDP defines five types of open space: a Natural Open Space Reserve (the southeast hills), Naturalistic Open Space (arroyos, Picnic Hill and the Botanic Gardens), Campus Landmark Open Spaces (including the Carillon Mall), Malls and Linear Open Spaces and Neighborhood Parks.

	limited, and native plant materials will be used where needed for erosion, screening, and restoration.
PS Open Space 3	*In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.*
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.*
PS Open Space 5	*Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*
PS Open Space 6	*Provide a new Campus Landmark Open Space on the West Campus, The Grove, to reflect the campus' citrus heritage and provide a gathering/activity space.*
PS Open Space 7	*Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.*
PS 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.*
PS Conservation 2	*Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees, whenever possible.*
PS Conservation 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.*
PS Conservation 4	*Preserve historic buildings to the extent feasible.*
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 Master Plan 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.*

With continued implementation of the PP 4.1-1, described above under Impact 4.1-1, in addition with the following existing campus Programs & Practices, the visual character and quality of the campus and surrounding area would also be preserved and enhanced:

PP 4.1-2(a) *The campus shall continue to provide design architects with the Campus Landscape Master Plan and instructions to develop project-specific landscape plans that are consistent with the Master Plan 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).)

PP 4.1-2(b) *The campus shall continue to relocate, where feasible, mature "specimen" trees that would be removed as a result of construction activities on the campus.*

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

PP 4.1-2(c) *To reduce impacts to the Natural Open Space Reserve area:*

(i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access.

(ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provide wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas.

(This is identical to Biological Resources PP 4.4-1(a) and Hydrology PP 4.8-3(a).)

PP 4.1-2(d) *To reduce disturbance of Natural and Naturalistic Open Space areas:*

(i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists.

(ii) Removal of native shrub or brush shall be avoided, except where necessary.

(iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access.

(iv) Excess fill or construction waste shall not be dumped in washes.

(v) Vehicles or other equipment shall not be parked in washes or other drainages.

(vi) Overwatering shall be avoided in washes and other drainages.

(vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc.

(This is identical to Biological Resources PP 4.4-1(b) and Hydrology PP 4.8-3(b).)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus. On the East Campus, this would include infill development in the academic core, expansion of the academic core, new housing and redevelopment of existing housing sites, new recreational facilities, new parking facilities, and preservation of open space. On the West Campus, new academic, housing, recreation, support, and open space would be developed in the area north of Martin Luther King Boulevard. Because each of these potential changes could modify the visual character or quality of individual locations, each potential change in land use and the impact to the visual character is addressed individually below.

East Campus

Infill Development: Most of the academic buildings on the UCR campus are located within the academic core, the area generally defined by Campus Drive, although some existing academic facilities are located south of South Campus Drive and east of East Campus Drive (south of Big Springs Road). To accommodate additional development in this area, the 2005 LRDP proposes to increase building density in the center of the campus (in the area encircled by a line approximately 2,000 to 2,500 feet from the Carillon Tower, roughly a ten minute walk from the tower), from the current floor-area ratio (FAR[7]) of 0.65 to a future FAR of approximately 1.0. To achieve the higher building density, it would be necessary to develop structures on sites that are currently undeveloped (e.g., infill development), build structures that are taller (e.g., four to five stories) than existing structures (generally less than three stories), and, in some locations, replace existing buildings with new structures. Because of the extent of existing development within the academic core, as well as the range of building heights (up to seven stories) and the presence of a substantial number of mature trees, infill development or replacement of existing structures is not anticipated to result in a substantial degradation of the visual character or quality of the existing academic core.

Implementation of LRDP Planning Strategies *Open Space 5* (preserve the Carillon Mall), *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would minimize impacts. The Carillon Mall would be retained as open space in order to maintain the overall campus layout. Buildings would be designed and reviewed to ensure consistency with the Campus Design Guidelines and the Campus Landscape Master Plan. Compliance with the Campus Design Guidelines and the Landscape Master Plan would achieve consistent scale, massing, and style in order to retain the underlying aesthetic character of the developed portions of the campus. Mature trees would

[7] Floor/Area ratio is the ratio of building area gross square footage (floor) to the land area associated with the building (area).

also be preserved or relocated whenever feasible. Thus, infill development within the academic core of the East Campus would not result in a substantial degradation of the visual character or quality at this location.

Expansion of the Academic Core: The 2005 LRDP would extend the academic core on the East Campus north of North Campus Drive to include the area currently occupied by the Lower Intramural Fields and the northern edge of University Avenue (west of Canyon Crest Drive and south of the Gage Basin). The development of academic facilities in this area would replace existing turf-covered lawn areas with academic buildings separated by landscaped open spaces and pedestrian walkways.

Implementation of LRDP Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that buildings are sited to minimize site disturbance and maintain existing landscapes, mature trees are preserved or relocated, whenever feasible, buildings are designed to be consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, and building designs are subject to a campus design review process. This process would ensure expansion of the campus in a manner that includes visually consistent themes and architecture. Although development along the northern edge of University Avenue and on the Lower Intramural Fields would change the visual character of those sites, with implementation of the identified LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, future development would be generally compatible with current development in the existing academic core. Therefore expansion of the academic core on the East Campus would not substantially degrade the visual character or quality at those locations.

New Housing: Implementation of the 2005 LRDP would result in the development of the northeast corner of the East Campus (east of the Pentland Hills and Lothian Residence Halls, north of Big Springs Road) to provide additional apartment-style student housing. This would result in the conversion of undeveloped open space into the site of mid-rise multi-family residential structures (e.g., two or three stories, with parking integrated into, or adjacent to, the housing structures). Existing views across the site from along Valencia Hill Drive (of large areas of undeveloped open space with grassy lawns and mature trees with campus buildings in the background) would be replaced by views of student housing. Views of this area from homes along Watkins Drive are only available from the rear of these homes and are partially screened by landscaping in the backyards of those homes and along the rail line located adjacent to Watkins Drive. The loss of undeveloped open space and the loss of views across the site from along Valencia Hill Drive has the potential to degrade the visual character and quality at this location.

Implementation of LRDP Planning Strategies *Open Space 4* and *Campus and Community 1* would ensure the development of landscaped buffers along the adjacent portions of Valencia Hill Drive and its southern extension, and Watkins Drive. In addition, Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and

continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would minimize impacts. Buildings would be designed and reviewed to ensure consistency with the Campus Design Guidelines and the Campus Landscape Master Plan. Current views across this area (east of Pentland Hills) from Valencia Hill Drive (of undeveloped open space with campus buildings in the background) would be replaced by views of a landscaped buffer with residential buildings in the background. The visual character would change from undeveloped open space to student housing, and these views would be similar to other views throughout the campus. The apparent intensity of development, as seen from off campus would increase, and a loss of open space would occur. However, LRDP Planning Strategies and programs and practices would allow consistent scale, massing, and style in order to retain the underlying aesthetic character of the developed portions of the campus. Mature trees would also be preserved or relocated whenever feasible, and buildings would be sited to minimize site disturbance and maintain existing landscapes. These measures would ensure that the visual quality of the area would not be substantially degraded. With implementation of the identified LRDP Planning Strategies and continued implementation of campus Programs and Practices, development of new housing east of Pentland Hills and Lothian Residence Halls would not substantially degrade the visual character or quality at this location.

Redevelopment of Housing: To accommodate the proposed housing goal (of 50 percent of the student population in on-campus or campus-controlled student housing), the Canyon Crest Family Student Housing complex would be redeveloped to provide higher-density housing and associated parking. The 2005 LRDP proposes to site apartment uses adjacent to Blaine Street and residence halls to the south. In addition, the Bannockburn Village mixed-use complex may be redeveloped to increase the housing and mixed use density on the site. Redevelopment of the Family Housing site would result in the replacement of existing one-story structures with mid-rise structures (e.g., three stories) and removal of a substantial number of mature trees. Redevelopment of the Bannockburn site would result in the replacement of the existing wooden structures (generally two or three stories) with mid-rise structures (e.g., three to four stories). Although redevelopment of these sites would result in the replacement of existing housing with new housing (at higher density), which would not substantially change the visual character of these areas, the loss of a substantial number of mature trees within the existing housing areas could degrade the visual character and quality of this location.

Implementation of LRDP Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would minimize impacts. Buildings would be designed and reviewed to ensure consistency with the Campus Design Guidelines and the Campus Landscape Master Plan. This would allow consistent scale, massing, and style in order to retain the underlying aesthetic character of the developed portions of the campus. Mature trees would also be preserved or relocated whenever feasible, and buildings would be sited to minimize site disturbance and maintain existing landscapes. Although redevelopment would change the visual character of this area, it is anticipated that future development would be consistent with the visual character of existing on-campus residential facilities and visually compatible with the off-campus multi-family residential structures

located north of Blaine Street, and that new landscaping would be provided in conjunction with the new housing. With implementation of the identified LRDP Planning Strategies and continued implementation of campus Programs and Practices, redevelopment of the Canyon Crest Family Student Housing complex or Bannockburn would not substantially degrade the visual character or quality at these locations.

Recreation: New recreational space would be developed north of Linden Street (in the southern portion of the redeveloped Family Student Housing complex) and with the new student housing east of the Pentland Hills and Lothian Residence Halls. The creation of new recreational space along Linden Street would change the character of this area from multi-family residential complex (with associated streets and on-street parking) to an area of turf-covered playing fields, courts, and some recreation or athletic-related structures. The creation of large expanses of turf-covered playing fields, courts and some recreational buildings would generally create the impression of a large open space, with lawn areas and landscaping around the edges. The creation of landscaped buffers along the adjacent portions of Valencia Hill Drive and Watkins Drive (per LRDP Planning Strategies *Open Space 4* and *Campus and Community 1*) would further screen any off-campus views of this recreational space. Thus, development of new recreational space on the East Campus would not result in a substantial degradation of the visual character at those locations.

Parking: Implementation of the 2005 LRDP would result in the relocation of parking from the academic core to the perimeter of the campus, which could result in the development of parking structures at several locations, including (1) the eastern edge of Parking Lot 13 (south of Big Springs Road), (2) the corner of Canyon Crest Drive and Blaine Street (currently occupied by a portion of the Family Student Housing complex), (3) the western edge of the UCR/Riverside Sports Complex (currently a surface parking lot), and (4) Parking Lot 24 (on Canyon Crest Drive, south of Linden Street). (Note: potential light and glare impacts associated with the proposed development of a parking structure at these locations are addressed in Impact 4.1-3 below).

The eastern portion of Parking Lot 13 is currently a surface parking lot, with undeveloped open space to the south, Big Springs Road to the north, and additional surface parking to the west. Intermittent views of the parking lot are available from some locations of Big Springs Road and from the rear of several single-family homes located immediately east of the site. Current views from the private homes are partially screened by vegetation (in the backyards of the homes) and include views of the surface parking lot with campus buildings in the background. Implementation of LRDP Planning Strategies *Open Space 4* and *Campus and Community 1* would require the provision of a landscaped buffer east of Parking Lot 13, between the proposed structure and the adjacent off-campus single-family homes. In addition, Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that a parking structure is sited and designed consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, which would include design features to reduce massing where appropriate, and to preserve or relocate mature trees are, when feasible. Current views from the rear of the off-campus homes east of Parking Lot 13 (of a surface parking lot with campus

buildings in the background) would be replaced by views of a landscaped buffer with a parking structure in the background. With implementation of the identified LRDP Planning Strategies and continued implementation of campus Programs and Practices, development of a parking structure at the eastern edge of Parking Lot 13 would not substantially degrade the visual character or quality at this location.

The proposed site of a parking structure at the corner of Canyon Crest Drive and Blaine Street is currently occupied by a portion of the Family Student Housing complex, with the UCR/Riverside Sports Complex to the west (across Canyon Crest Drive) and a church and multi-family residential structures to the north (across Blaine Street). The Family Student Housing complex is currently occupied with one-story residential buildings, internal streets, on-street parking, and numerous mature trees. Vine-covered fences along Canyon Crest Drive and Blaine Street generally screen views of the site, except at access driveways along Canyon Crest Drive. Development of a parking structure would replace existing one-story structures with a multi-level parking structure (e.g., 3 or 4 levels) and removal of a substantial number of specimen trees. The loss of a substantial number of mature trees within the existing Family Student Housing area could substantially degrade the visual character and quality of this location. LRDP Planning Strategy *Campus & Community 1* would require sensitive land use transitions and landscaped buffers for off-campus residential neighborhoods, which would reduce visual quality impacts along the northern edge of this parking structure. In addition, LRDP Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that a parking structure is sited and designed consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, and that mature trees are relocated, when feasible. Current views along Blaine Street and Canyon Crest Drive (of a vine-covered fence with one-story buildings and trees in the background) would be replaced by views of a landscaping and a multi-story parking structure. It is assumed that the design of the parking structure would be consistent with the style of other campus buildings, and thus would be compatible with adjacent on-campus development. Although the visual character of this location would be modified, with implementation of the identified LRDP Planning Strategies and continued implementation of campus Programs and Practices, development of a parking structure at the corner of Canyon Crest Drive and Blaine Street would not substantially degrade the visual character or quality at this location.

The western edge of the UCR/Riverside Sports Complex (west of Rustin Avenue and north of Linden Street) is currently occupied by a surface parking lot, with a baseball stadium to the east, and multi-family residential development to the west (across Rustin Avenue) and north (across Linden Street) and an undeveloped parcel to the south. Views of the site are available from within the sports complex, the adjacent multi-family residential structures facing the site, and the vacant parcel to the south. LRDP Planning Strategy *Campus & Community 1* would require sensitive land use transitions and landscaped buffers for off-campus residential neighborhoods, which would reduce visual quality impacts along the western and northern edges of this proposed parking structure. In addition, LRDP Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building

and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that a parking structure is sited and designed consistent with the Campus Design Guidelines and the Campus Landscape Master Plan and that mature trees are relocated, when feasible. Current views from the multi-family dwellings (of a landscaped surface parking lot with baseball stadium in the background) would be replaced by views of a landscaping and a multi-story parking structure. It is assumed that the design of the parking structure would be consistent with the style of other campus buildings, and thus would be compatible with adjacent on-campus development. With implementation of the identified LRDP Planning Strategies and continued implementation of campus Programs and Practices, development of a parking structure at the western edge of the UCR/Riverside Sports Complex would not substantially degrade the visual character or quality at this location.

Parking Lot 24, on Canyon Crest Drive south of Linden Street is already a surface parking lot, with the UCR Track Stadium to the east, a Softball field to the south, Bannockburn mixed-use complex and multi-family residential dwellings to the west, and the UC Police Department building to the north. Views of the site (of a landscaped surface parking lot and track stadium in the background) are available from Canyon Crest and the buildings facing the site along the western edge of Canyon Crest. LRDP Planning Strategy *Campus & Community 1* would require sensitive land use transitions and landscaped buffers for off-campus residential neighborhoods, which would reduce visual quality impacts along the western edge of this proposed parking structure. In addition, LRDP Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that a parking structure is sited and designed consistent with the Campus Design Guidelines and the Campus Landscape Master Plan and that mature trees are relocated, when feasible. It is assumed that the design of the parking structure would be consistent with the style of other campus buildings, and thus would be compatible with adjacent on-campus development. With implementation of the identified LRDP Planning Strategies and continued implementation of campus Programs and Practices, development of a parking structure at Parking Lot 24 would not substantially degrade the visual character or quality at this location.

Open Space: The 2005 LRDP would preserve the undeveloped southeast hills as a Natural Open Space Reserve; designate the arroyos, Picnic Hill, and Botanic Gardens as Naturalistic Open Spaces; preserve the Carillon Mall as a Campus Landmark Open Space; and recognize Pedestrian Malls and Linear Open Spaces within the academic core. Within the Natural Open Space Reserve, sensitively sited utility projects could be developed. This is envisioned to include an additional 7 million gallon water storage tank adjacent to the existing storage tank to decrease reliance on back-up water pressure from the City for fire fighting capabilities (refer to Section 4.12 Public Services for detail). Within the other open spaces, in addition to utility projects, circulation improvements, such as pedestrian and bicycle paths, could also be developed.

With implementation of LRDP Planning Strategies *Open Space 1* (protect southeast hills as an Open Space Reserve), *Open Space 2* (limit development and access in southeast hills), and *Open Space 3* (preserve

natural landforms, plant materials and trees in Naturalistic Open Space), open space in the southeast hills, arroyos, Picnic Hill, and the Botanic Gardens would be preserved. Continued implementation of PP 4.1-2(c) and PP 4.1-2(d) would ensure that impacts to the Natural Open Space Reserve and Naturalistic Open Spaces are minimized. In addition, continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that future utility and circulation projects are sited and designed consistent with the Campus Design Guidelines and the Campus Landscape Master Plan and that mature trees are relocated, when feasible. This would include planting of native vegetation as appropriate to screen the water storage tank. With continued implementation of the identified campus Programs and Practices, potential future development within designated open space areas would not substantially degrade the visual character or quality at this location.

West Campus

Development on the West Campus would be new and would all occur within the same general area, bounded by the I-215/SR-60 freeway, Martin Luther King Boulevard, a line extending south of Cranford Avenue, and University Avenue. Instead of addressing the potential visual impact of each type of new land use on the West Campus, the potential impact to the entire West Campus is addressed as a whole. Potential new land uses on the West Campus include the following:

- **Academic**: The 2005 LRDP would extend the academic core onto the West Campus, in the area generally bounded by Martin Luther King Boulevard, the I-215/SR-60 freeway, University Avenue, and a line extending south from the western edge of UNEX.
- **Housing**: New housing (and associated parking) would be developed on the West Campus, in the area generally bounded by the northern edge of the West Campus (partially bordered by Everton Place), a line extending south from the western edge of UNEX (west of the expanded Academic Core), Martin Luther King Boulevard, and a line extending south of Cranford Avenue.
- **Recreation**: New recreational space would be provided on the West Campus adjacent to the new housing, which could include turf-covered playing fields or court space, such as basketball or volleyball, and/or buildings that accommodate recreational or athletic programs.
- **Support**: Campus support facilities, including physical and central plant facilities or housing support facilities could be developed along the eastern edge of the West Campus (adjacent to the I-215/SR-60 freeway) and at the northwestern corner of the West Campus.
- **Parking**: New parking on the West Campus would be developed at the northeast corner of Martin Luther King Boulevard and Canyon Crest Drive (adjacent to the I-215/SR-60 freeway), north of Martin Luther King Boulevard and east of Iowa Avenue, and east of UNEX, on University Avenue. Parking for residents would be incorporated within new campus housing areas. Parking for recreational users would be incorporated within project design for recreational uses.
- **Open Space**: New open space would be created on the West Campus, including a new Campus Landmark Open Space, the Grove, pedestrian malls and/or linear open spaces (including a pedestrian link to the East Campus), and Neighborhood Parks, which would be developed in conjunction with new Family Student Housing.

- **Campus Reserve**: An approximately 37-acre parcel at the western edge of the West Campus (northeast of the intersection of Chicago Avenue and Martin Luther King Boulevard) is designated as a reserve for future land uses. For the purposes of this EIR, it is assumed that no development would occur during the LRDP planning horizon and this area would remain as agricultural teaching and research fields. Although the type of crops and orchards in this area may be modified due to changes in teaching and research programs, no change in the existing visual character or quality of this area and its surroundings is anticipated. Should a change in land use be proposed in the future, a separate CEQA evaluation would occur.
- **Agricultural Teaching and Research Fields**: LRDP Planning Strategy *Land Use 3* would retain the agricultural teaching and research fields south of Martin Luther King Boulevard. Although the type of crops and orchards may be modified due to changes in teaching and research programs, no change in the existing visual character or quality of this area and its surroundings is anticipated.

Development of the West Campus would result in the replacement of agricultural teaching and research fields (and surface Parking Lot 30) with academic buildings, housing, recreational playing fields and facilities, support facilities, and parking. The introduction of new academic and residential structures would change the visual character of the West Campus. No development is assumed to occur south of Martin Luther King Boulevard except for support facilities such as greenhouses or storage for agricultural operations. Within the 37-acre parcel designated as Campus Reserve, any change in land use would require a land use amendment to the LRDP. Changes in the visual character of the West Campus would be limited to the area north of Martin Luther King Boulevard, and would be most visible along the edges of this portion of the West Campus, including University Avenue, the I-215/SR-60 freeway, Martin Luther King Boulevard, Iowa Avenue, and Everton Place.

Along University Avenue, the area around UNEX could be subject to additional development, or redevelopment, which could include a parking structure east of UNEX. Along the I-215-SR-60 freeway, implementation of the 2005 LRDP could result in the development of academic (including administrative and library uses) and support facilities (which could include central plant facilities). Along Martin Luther King Boulevard, the 2005 LRDP proposes new parking east of Canyon Crest Drive, academic uses and parking west of Canyon Crest Drive (to a line extending south of the western edge of UNEX) and housing in the vicinity of Iowa Avenue. Along Iowa Avenue, implementation of the 2005 LRDP would result in the development of housing and recreational playing fields and facilities. Along Everton Place (and the northern boundary of the West Campus west of UNEX), new apartment housing would be developed. At the northwestern corner of the West Campus, west of Cranford Avenue, new campus support space would be provided, which could include housing support space or central plant facilities.

The development of new buildings, housing, recreation and support facilities, and parking (including parking structures) would result in the conversion of agricultural teaching and research fields into the site of permanent buildings and structures. The development of a large parcel that could be considered undeveloped due to existing agricultural activities has the potential to degrade the visual character and quality of this portion of the West Campus.

Implementation of LRDP Planning Strategy *Land Use 3* (preservation of agricultural, teaching and research fields south of Martin Luther King Boulevard) would preserve the visual character and quality of that area. In addition, LRDP Planning Strategies *Open Space 4* and *Campus and Community 1* would require the provision of landscaped buffers along Martin Luther King Boulevard and the I-215/SR-60 freeway. the intent of these Planning Strategies is to buffer future campus uses from adjacent roadways. However, the creation of landscaped buffers would also have the effect of minimizing visual effects from development along those edges of the West Campus.

LRDP Planning Strategy *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, PP 4.1-2(a), and PP 4.1-2(b), would require that buildings be designed to be consistent with the Campus Design Guidelines and the Campus Landscape Master Plan and that mature trees be relocated, whenever feasible. Consequently, new development would be built with consistent architectural themes, and provide a unified visual setting on the West Campus. Conformance with the Campus Landscape Master Plan would soften the visual effects of buildings by providing landscaping and would provide a cohesive landscape character throughout the West Campus. In addition, the development of a central, landscaped area similar to the existing Carillon Mall on the East Campus would provide a central open space area on 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. 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 & Practices, implementation of the 2005 LRDP would not substantially degrade the visual character or quality of the campus and its surroundings, and this impact would be *less than significant*.

Threshold	Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Impact 4.1-3 **Development under the 2005 LRDP could create new sources of light or glare in the campus area or vicinity that would adversely affect day or nighttime views from adjacent land uses. With the implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, which could result in the introduction of new sources of light and glare at some locations that would adversely affect day or nighttime views from adjacent off-campus land uses.

Implementation of the 2005 LRDP would be guided by a range of Planning Strategies, discussed above under Impact 4.1-2, which are relevant to visual quality impacts, including *Land Use 3* (preservation of agricultural, teaching and research fields south of Martin Luther King Boulevard), *Open Space 1* (protect southeast hills as an Open Space Reserve), *Open Space 2* (limit development and access in southeast hills), *Open Space 3* (preserve natural landforms, plant materials and trees in Naturalistic Open Space), *Open Space 4* (provide landscaped buffers along Valencia Hill Drive and its southern extension, Martin Luther King Boulevard, and the I-215/SR-60 freeway), *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Campus & Community 1* (provide sensitive land use transitions and landscaped buffers for off-campus residential neighborhoods), and *Development Strategy 1* (design review of building and landscape development). In addition, continued implementation of PP 4.1-1 (provide design architects with the Campus Design Guidelines), described above under Impact 4.1-1, and PP 4.1-2(a) and PP 4.1-2(b) (provide design architects with the Campus Landscape Master Plan and relocate, where feasible, mature trees removed by construction), described above under Impact 4.1-2, would ensure that light and glare impacts on adjacent land uses would also be reduced or avoided.

Implementation of the 2005 LRDP would result in development at the campus perimeter, including additional housing and recreational facilities (including outdoor fields with nighttime lighting) east of the Pentland Hills Residence Halls complex; redevelopment of the Canyon Crest Family Housing and Bannockburn housing complexes; parking facilities on the perimeter of campus; and new academic, housing, recreation, and open space on the West Campus (north of Martin Luther King Boulevard). The potential for future development at each of these locations to result in light and glare impacts on adjacent uses are addressed individually below.

Development of student housing and recreational facilities at the northeast corner of the East Campus (east of the Pentland Hills Residence Halls, west of Valencia Hill Drive and south of Watkins Drive) would introduce new sources of light and glare into an area that is currently undeveloped. Development of mid-rise apartment residential structures (e.g., three stories) and associated parking and recreational playing fields (which might include turf-covered lawn areas, basketball courts, or similar facilities) would introduce new sources of light, including interior building lights (visible through windows), exterior building lights, security lighting along pedestrian walkways, and light standards within parking lots and along access driveways into an area that is currently undeveloped. In addition, recreational space that would be provided in association with student housing would include lighting of outdoor fields during evening and early nighttime hours. With implementation of LRDP Planning Strategies *Open Space 4* and *Campus & Community 1*, landscaped buffers would be developed along the adjacent portions of Valencia Hill Drive and its extension south and Watkins Drive. While these landscape buffers were identified in order to screen campus uses from adjacent roadways, they would also serve to provide a visual buffer for adjacent residents of proposed development, including nighttime lighting. In addition, implementation of the other LRDP Planning Strategies identified above and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that buildings are sited to minimize site disturbance and retain mature trees where feasible and that buildings are designed to be consistent with the Campus

Landscape Master Plan and the Campus Design Guidelines, which includes provisions to reduce light and glare effects.

Redevelopment of the Canyon Crest Family Student Housing complex to provide additional housing, recreational space, and parking would replace existing one-story structures with mid-rise structures (e.g., three to four stories). Because the site is already developed, existing light sources (including exterior building lights, security lighting along pedestrian walkways, and light standards within parking lots and along access driveways) would generally be replaced by similar sources in the new development. However, because the new structures would be taller (up to three to four stories) than existing development, interior light sources would be visible through windows in the buildings. In addition, new recreational space would include lighting of outdoor play areas during evening and early nighttime hours. Lighting associated with this use would have the potential to spill onto adjacent areas if not properly designed. Redevelopment of the Bannockburn Village site would result in the replacement of the existing wooden structures (generally two to three stories) with mid-rise structures (e.g., three to four stories) and associated parking. Because the future structures would be consistent with current uses (housing, retail, and parking lots), no substantial changes in light and glare impacts from that location are anticipated. Implementation of the LRDP Planning Strategies identified above and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that buildings are sited to minimize site disturbance and that buildings are designed to be consistent with the Campus Design Guidelines, which include provisions to reduce light and glare impacts, including limiting the use of reflective building materials and selection of colors that are consistent with the existing campus color palette.

The 2005 LRDP identifies several existing and potential new locations for parking, which may result in the development of parking structures at some of these locations, including Blaine Street and Rustin Avenue (the eastern edge of the UCR/Riverside Sports Complex), Canyon Crest Drive and Blaine Street (currently occupied by the Family Student Housing complex), Canyon Crest Drive (south of Linden, the current Parking Lot 24), Canyon Crest Drive (south of University Avenue, the current Parking Lot 1), Big Springs Road (the current Parking Lot 13, at the eastern edge of the East Campus), four sites on Martin Luther King Boulevard (east of Canyon Crest Drive, next to the I-215/SR-60 freeway, and east of Iowa Avenue), and at the proposed conference center east of UNEX. At each of these parking locations, light and glare impacts could result from interior illumination of parking structures, exterior lighting of parking structures (e.g., associated with vehicular and pedestrian entrances) and exterior lighting of the parking area (e.g., either a surface lot, with standard street lamp fixtures, or the top parking deck of a parking structure). In addition, light and glare impacts could also result from the headlights of cars entering or exiting the parking structure (or parking lot), or from cars on ramps or the upper levels of parking structures. Implementation of the LRDP Planning Strategies identified above and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would reduce potential light and glare impacts. However, light standards in parking lots, or used to illuminate the upper level of parking structures, combined with headlights from vehicles entering or exiting parking structures could adversely effect day and nighttime views at adjacent locations.

Implementation of the LRDP Planning Strategies identified above and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would ensure that buildings are sited to minimize site disturbance and maintain existing landscapes, buildings are designed to be consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, building designs are subject to a campus design review process which includes provisions to reduce light and glare effects, and that mature trees are preserved or relocated, whenever feasible. Although development of new housing, recreational, and parking facilities would change the visual character of this area, it will be compatible with the nighttime lighting and glare of existing on-campus residential structures and the off-campus multi-family residential structures located north of Blaine Street.

The 2005 LRDP would also extend the academic core onto the West Campus and also result in new housing and recreational space on the West Campus. This would result in new sources of light and glare, including recreational field lighting building surfaces and night lighting, along roadways and pedestrian pathways, exterior building illumination, and interior building illumination (visible thru windows). LRDP Planning Strategies *Land Use 3* would result in retention of the agricultural teaching and research fields south of Martin Luther King Boulevard. Planning Strategy *Open Space 4* would result in development of a landscaped buffer along the northern edge of Martin Luther King Boulevard in order to buffer proposed housing from this roadway, although this would also serve to reduce the visibility of light and glare effects from new development in adjacent areas. Consequently, light and glare impacts on adjacent land uses from development of the West Campus would be minimized. Implementation of the other LRDP Planning Strategies identified above and continued implementation of PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would also ensure that new development would be consistent with the Campus Design Guidelines, which include provisions to reduce light and glare impacts, including limiting the use of reflective building materials and selection of colors that are consistent with the existing campus color palette.

Implementation of 2005 LRDP Planning Strategies and PP 4.1-1, PP 4.1-2(a), and PP 4.1-2(b) would reduce impacts associated with light and glare. However, with proposed development in areas that currently have little or no sources of illumination and development of parking structures at the campus perimeter, light and glare impacts would remain potentially significant. Even with implementation of the identified LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP could result in the creation of new sources of substantial light or glare on campus or in the immediate vicinity that would adversely affect day or nighttime views in the area.

MM 4.1-3(a) would require incorporation of design features that would minimize glare. Features would include nonreflective surfaces on building exteriors and prohibition of mirrored glass. In addition, MM 4.1-3(b) would require that lighting be directed to the intended illumination site to reduce spill onto adjacent areas. MM 4.1-3(c) would require structural or other barriers on parking structures to reduce light and/or glare impacts from headlights on vehicles entering or exiting the parking structure.

MM 4.1-3(a) *Building materials shall be reviewed and approved as part of project-specific design and through approval of construction documents. Mirrored, reflective glass is prohibited on campus.*

MM 4.1-3(b) *All outdoor lighting on campus resulting from new development shall be directed to the specific location intended for illumination (e.g., roads, walkways, or recreation fields) to prevent stray light spillover onto adjacent residential areas. In addition, all fixtures on elevated light standards in parking lots, parking structures, and athletic fields shall be shielded to reduce glare. Lighting plans shall be reviewed and approved prior to project-specific design and construction document approval.*

MM 4.1-3(c) *Ingress and egress from new parking areas shall be designed and situated so as to minimize the impact of vehicular headlights on adjacent uses. Walls, landscaping or other light barriers will be provided. Site plans shall be reviewed and approved as part of project-specific design and construction document approval.*

With implementation of MM 4.1-3(a) through MM 4.1-3(c), implementation of the 2005 LRDP would not create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area, and this impact would be reduced to a *less-than-significant* level.

4.1.5 Cumulative Impacts

The geographic context for the analysis of cumulative aesthetic impacts includes areas with views to and from the UCR campus, which consists of the campus itself, as well as portions of the City and County of Riverside. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan and the County of Riverside General Plan, as well as development of off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis).

Implementation of the 2005 LRDP, in association with other projects causing aesthetic impacts, would not result in a significant cumulative impact on scenic vistas, including the availability or quality of panoramic views of natural landforms, such as the southeastern hills, Box Springs Mountains, Mount Rubidoux, or the San Bernardino Mountains, as development in these areas is largely restricted. Development of University Village and apartments at the corner of Iowa and Linden could block distant views from adjacent roadways. However, distant views would remain from roadways in adjacent areas. Further, these areas are not considered public gathering places. The proposed project would not significantly impact scenic vistas, and related projects would minimally contribute to this impact. Therefore, the impact of the contribution of the 2005 LRDP to cumulative impacts on scenic vistas is not cumulatively considerable.

Land uses surrounding the campus consist primarily of residential, with some commercial uses along the major streets. Anticipated projects in this area include residential and retail developments, which would occur through the conversion of vacant lands and low-density uses to higher density uses. In particular,

University Village proposes a complex of structures up to eight stories in height. Other related projects are anticipated to increase the density of the built environment along University Avenue and areas immediately adjacent. While the exact location of all non-campus development that could affect view corridors is unknown, it is anticipated that additional development would increase the urban nature of the area; however, it would not necessarily degrade the visual character. It is anticipated that the protections afforded to natural scenic resources through the CEQA review process, scenic highway protection requirements, and local design review procedures will be applied. This would minimize degradation to the visual character of the area. It is possible that future loss of individual scenic natural resources could be regarded as significant on a project-specific basis.

Focal views of urban features such as public art and signs, or visually important or historic structures, are protected from adverse impacts by City of Riverside ordinances, the CEQA review process, and through the application of guidelines for the preservation of visual integrity contained in planning documents such as the City's General Plan and the University Community Plan. (The 2005 LRDP's contribution to cumulative impacts on historic buildings as a cultural resource are analyzed in Section 4.5 of this EIR, and are concluded not to be cumulatively considerable.) However, although future development is anticipated to comply to the extent feasible with these ordinances and guidelines, impacts could occur to these unique focal views as a result of specific development projects, and thus contribute to a cumulative impact that could be regarded as cumulatively considerable. As discussed above, the 2005 LRDP will continue to implement LRDP Planning Strategies and campus Programs and Practices to preserve the existing architectural character of the campus and to maintain existing areas of special interest and aesthetic quality on campus. As a result, the contribution of the 2005 LRDP to impacts on focal views of urban features is not cumulatively considerable.

With respect to visual character and/or quality, future development in the area will continue to be guided by the land use designations and planning policies provided in the City and County General Plans, the Zoning Codes, and any applicable ordinances and design requirements. Impacts associated with visual character and/or quality were determined not to be cumulatively considerable on a regional scale, as reflected in both General Plan EIRs. 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. Much of the development under the 2005 LRDP will occur in the East Campus, which is shielded from view for the most part from the surrounding neighborhoods in large part by landscaping and other buffers, which surround the campus. Development in the West Campus would occur in areas that are currently occupied by agricultural uses, but are adjacent to areas that are fully developed on the north and west. Development will thus be visually consistent with the surroundings and the contribution of the 2005 LRDP to these impacts is not cumulatively considerable.

Related projects could result in the creation of new sources of substantial light or glare that could affect day or nighttime views. While much of the subject geographic area is composed of single- and multi-family residential neighborhoods that could be sensitive to increases in light or glare, most development that could include substantial sources of light, such as University Village, would be concentrated in commercial areas, which are not considered light sensitive, such as along University Avenue. Added light

in these areas will not substantially penetrate into residential communities, or to other land uses that are light sensitive, due to the separation of these types of land uses. However, additional development may substantially increase daytime glare due to an increase in the number of windows and uncertainty as to the type of building materials that future development will use. Consequently, a cumulatively considerable impact could occur. However, the contribution of the 2005 LRDP will not be cumulatively considerable with regard to a substantial new source of light and glare with implementation of appropriate LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, as described above in Impact 4.1-3. Development of the 2005 LRDP on the East Campus is shielded for the most part from surrounding land uses by landscape and topographic buffers, and already is a source of nighttime illumination. For development occurring on the West Campus, shielding, in combination with buffers and landscaping, will reduce impacts to off-campus land uses from nighttime lighting and vehicle headlights. With regard to glare impacts, a campus practice that requires the use of nonreflective glass and textured materials will also reduce glare. Consequently, the contribution of the 2005 LRDP to cumulative aesthetic impacts would not be considerable and cumulative impacts are considered less than significant.

4.1.6 References

Riverside, City of, 1994. General Plan. September

Riverside, County of, 2003. *County of Riverside General Plan Program EIR*, October.

University of California, Davis. 2003. UC Davis Long Range Development Plan Program Draft Environmental Impact Report, SCH No. 2002102092. May

University of California, Los Angeles. 2003. *UCLA Long Range Development Plan Final Environmental Impact Report*, SCH No. 2002031115. February

University of California, Riverside (UCR). 1990. *Final Environmental Impact Report on the 1990 Long Range Development Plan* (FEIR), SCH No. 90020114.

4.2 AGRICULTURAL RESOURCES

4.2.1 Introduction

This section describes existing agricultural resources at the UCR campus and describes whether implementation of the 2005 LRDP would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, to nonagricultural use; conflict with existing zoning for agricultural use, or a Williamson Act contract, or involve other changes to the existing environment, which, due to their location, could result in conversion of farmland to other non-agricultural use.

The information included in this section regarding the amount and location of Prime Farmlands, Farmlands of Statewide Importance, and agricultural teaching and research fields have been provided by UCR's Agricultural Operations Department. Bibliographic entries for reference materials appear in Section 4.2.5 (References) of this section.

One comment letter related to agricultural resources was written in response to the Notice of Preparation circulated for the project. This letter noted that the western portion of the UCR campus is developed as agricultural fields. The Notice of Preparation, those comments on the Notice of Preparation, a summary of issues raised in consultation with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.2.2 Existing Conditions

Physical Description

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 eight percent.

Prime Farmland and Farmland of Statewide Importance

According to UCR's Agricultural Operations Department, 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. This is a slight decline (of 28.3 acres) since the 1990 LRDP EIR was prepared, due to development of that land for nonagricultural uses. Figure 4.2-1 shows the location of the Prime Farmland and Farmland of Statewide Importance on the UCR campus.

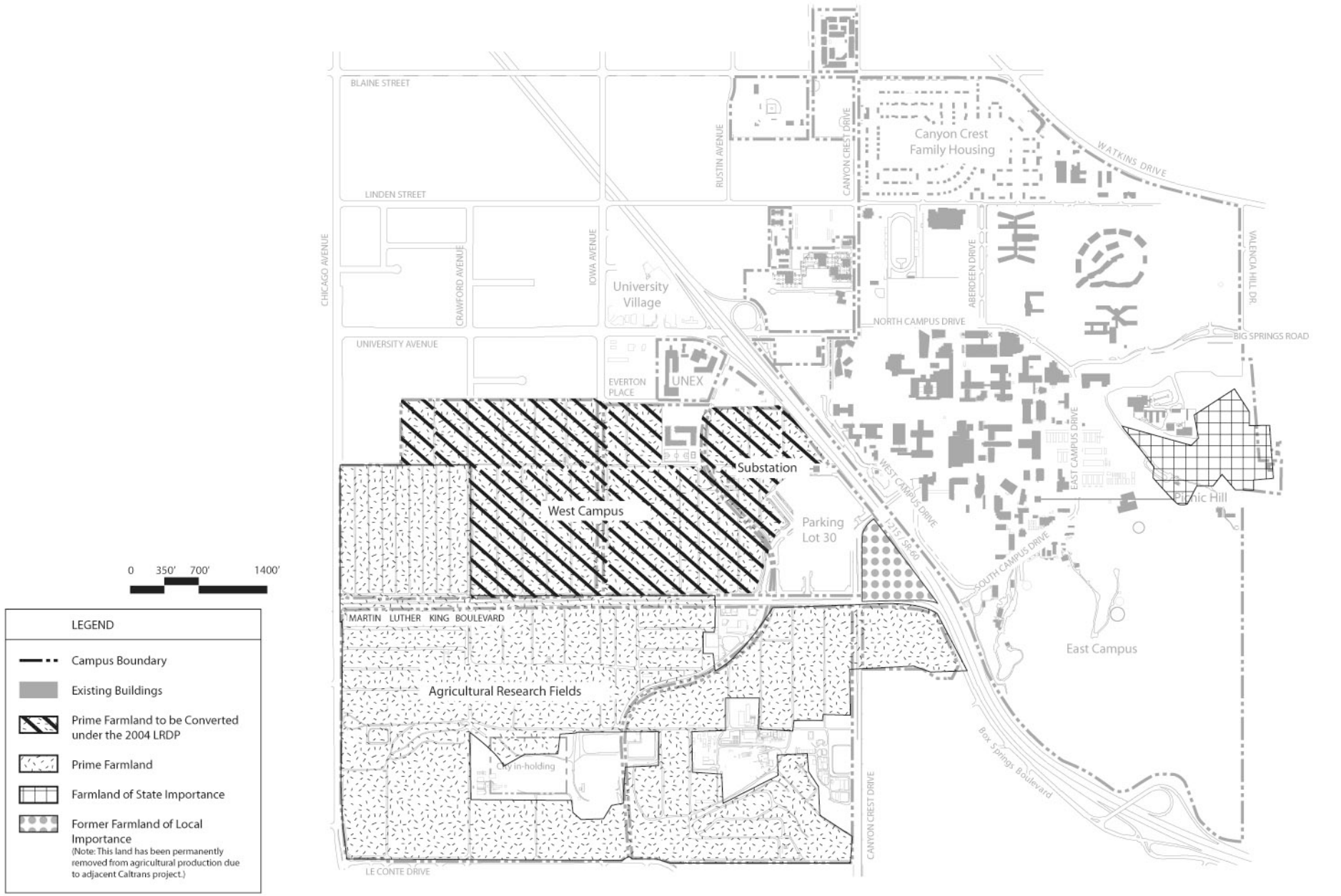

FIGURE **4.2-1**

Farmland on the UCR Campus

Scale: 1" = 1,400'

10537-00

Sources: UC Riverside LRDP, 2005; USGS Aerial, Riverside East NW, 1996; EIP Associates, 2004; FMMP, 2004

UC Riverside

EIP ASSOCIATES

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. Approximately 420 acres of this land 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 323.7 acres of arable land, of which 254.6 acres are permanent crops and 69.1 acres are row crops.

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 Boulevard and by experimental plots to the south. Most of the northern portions of the fields undergo limited, but systematic, disturbances resulting from weed control, citrus harvesting, and other activities associated with maintenance. The southern portions of the fields 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.

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 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 five acres of land adjacent to the new site of the CES. 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.

The collection has expanded since 1917, and currently, the Citrus Variety Collection occupies 22.3 acres on the UCR West Campus, south of MLK and east 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 900 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.

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 UCR West Campus. The off-campus field station is the 540-acre Coachella Valley Agricultural Research Station (CVARS), located 80 miles southeast of campus. The CVARS is ideally situated to become the focal point of research on issues of importance to agriculture in desert regions. The 1990 LRDP EIR identified the loss of Prime Farmland as a significant impact (Impact 4.1-1 in that document). As a result, MM 4.1-1 from the 1990 LRDP EIR stipulated acquisition of replacement agricultural off-campus to mitigate the loss of agricultural teaching and research land. Consistent with that Mitigation Measure the campus acquired the CVARS, a 540-acre facility

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. One citrus orchard remained at the southwest corner of Chicago Avenue and Martin Luther King Boulevard (directly west of the West Campus); however, this parcel was zoned for Medium-Family Residential uses, and a proposal was approved at the start of this document to develop residential uses on this property. The grove was removed in late 2004. Other scattered agricultural lands within the City of Riverside are generally located adjacent to hillsides or along topographic ridges or gullies.

4.2.3 Regulatory Framework

State Programs

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.

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 CEQA Guidelines refers to this classification system for the evaluation of the potential for significant environmental impacts.

The FMMP's Important Farmland Maps classify agricultural lands located on the UCR campus as "Prime Farmland" and "Farmland of Statewide Importance." The broad definitions for these two 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.
- *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 or Farmland of Statewide Importance, the soil must meet the physical and chemical criteria for Prime 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.

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. As indicated in the Initial Study prepared to accompany the Notice of Preparation for this EIR, no portion of the campus is under a Williamson Act contract because the University is tax exempt.

Riverside County Programs

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, per the California Land Conservation (or Williamson Act). As noted above, none of the UCR campus is designated as an agricultural preserve or is covered by a Williamson Act contract.

Riverside City Programs

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.

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

> …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 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 "Official." This is regardless of the different land use areas located on 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 Propositions R or C.

4.2.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps 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 2005 LRDP to result in the direct or indirect loss of agricultural uses and prime farmland on the UCR campus, existing land uses were compared to those uses proposed in the 2005 LRDP. To determine the potential for indirect effects to non-UC agricultural lands, existing land uses and zoning designations for agricultural lands near the campus were reviewed. As noted above, none of the agricultural land on the UCR campus is covered by Williamson Act contracts.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on agricultural resources if it would result in any of the following:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to nonagricultural use
- Conflict with existing zoning for agricultural use, or a Williamson Act contract
- Involve other changes to the existing environment, which, due to their location or nature, could result in conversion of farmland to other non-agricultural use

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to Be Significant related to agricultural resources; therefore, all potential impacts to agricultural resources are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project 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 nonagricultural use?

Impact 4.2-1 **Implementation of the 2005 LRDP would result in the conversion of approximately 125 acres of Prime Farmland to nonagricultural uses. Even with implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *significant and unavoidable*.**

Implementation of the 2005 LRDP would result in the development of new academic, support, housing, parking, and recreational uses on the West Campus, north of Martin Luther King Boulevard, in an area currently occupied by agricultural teaching and research fields and production citrus groves (where the fruit is sold commercially). This would result in the conversion of Prime Farmland to non-agricultural uses.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategy is relevant to preservation of agricultural land uses:

PS Land Use 2 — *In order to achieve 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 Land Use 3 — *Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*

Achieving a higher Floor Area Ratio in the center of the campus would promote a compact and contiguous academic core and reduce pressure to convert agricultural land to nonagricultural uses. Preservation of the agricultural teaching and research fields on the West Campus south of Martin Luther King Boulevard would limit conversion of West Campus agricultural lands to that area north of Martin Luther King Boulevard.

The 2005 LRDP proposes extension of the academic core onto the West Campus, in the area generally bounded by Martin Luther King Boulevard, the I-215/SR-60 freeway, University Avenue, and a line extending south from the western edge of UNEX. In addition, new housing, parking, recreational and campus support space would be developed in the area generally bounded by the northern edge of the

West Campus (partially bordered by Everton Place), a line extending south from the western edge of UNEX (west of the expanded Academic Core), Martin Luther King Boulevard, and a line extending south of Cranford Avenue. In addition, the 2005 LRDP designates an approximately 37-acre parcel at the western edge of the West Campus (northeast of the intersection of Chicago Avenue and Martin Luther King Boulevard) as a reserve for future land uses that are unknown at this time. For the purposes of this EIR, it is assumed that this area would remain as agricultural teaching and research fields and no development would occur during the LRDP planning horizon.

As noted in the setting, a total of 481.7 acres of Prime Farmland and Farmland of Statewide Importance are located on the UCR campus, primarily on the West Campus (refer to Figure 4.2-1). Implementation of the 2005 LRDP would not result in the loss of any Prime Farmland on the East Campus. The agricultural teaching and research fields south of Martin Luther King Boulevard would remain preserved for agricultural uses in the 2005 LRDP. For the purposes of this EIR, it is assumed that implementation of the 2005 LRDP would result in the loss of all agricultural teaching and research fields north of Martin Luther King Boulevard, except for the approximately 37-acre parcel located at the western edge of the West Campus, northeast of the intersection of Chicago Avenue and Martin Luther King Boulevard, which is designated as the Campus Reserve. Therefore, implementation of the 2005 LRDP would convert approximately 125 acres of Prime Farmland into nonagricultural uses (refer to Figure 4.2-1 for location).

As discussed in the existing setting, the Coachella Valley Agricultural Research Station in 1994 was acquired to mitigate for the loss of Prime Farmland that was projected to occur under the 1990 LRDP. Thus, some of the agricultural teaching and research activities that would be displaced by the 2005 LRDP could be relocated to the CVARS. However, the 2005 LRDP would still convert approximately 125 acres of Prime Farmland into nonagricultural uses. Thus, the acquisition of the CVARS reduces the programmatic loss of the 125 acres of agricultural land on campus, but it does 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.

Even with implementation of the identified 2005 LRDP Planning Strategies, implementation of the 2005 LRDP would convert approximately 125 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 and unavoidable***.

Threshold	Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Impact 4.2-2 **Implementation of the 2005 LRDP would not conflict with existing zoning for agricultural use, or a Williamson Act contract. *No impact* would result.**

Implementation of the 2005 LRDP would result in existing agricultural teaching and research fields on the West Campus north of Martin Luther King Boulevard being converted to nonagricultural uses. The

UCR campus is zoned O ("Official" Zone) by the City of Riverside Zoning Code, which is intended for official and public uses of property and related activities, including civic center, public schools, public buildings, parks and recreation areas, waterworks and drainage facilities and highways (City of Riverside Zoning Code, Chapter 19.6). Although agricultural uses and related activities are permitted in the Official zone, no portion of the UCR campus is specifically zoned for agricultural use. Further, the University of California, which is constitutionally exempt from local zoning and land use plan/element requirements. No portion of the UCR campus is under a Williamson Act contract. The conversion to non-agricultural use would thus not be inconsistent with the City of Riverside's designation of the campus.

Agricultural production would continue south of Martin Luther King Boulevard and on the 37-acre parcel located west of proposed development on the West Campus. A road and landscaped buffer would separate proposed residences from adjacent farming operations. This would minimize pesticide drift, odor, and dust generated by agricultural uses from reaching residences. However, the existing International Village Housing is currently in close proximity to agricultural uses. The proximity of agricultural operations to residential land uses would not vary from existing conditions.

Implementation of the 2005 LRDP would not conflict with existing zoning for agricultural use, or a Williamson Act contract, and *no impact* would result.

Threshold	Would the project involve other changes in the existing environment that, due to their location or nature, could result in conversion of farmland to nonagricultural use?

Impact 4.2-3 **Implementation of the 2005 LRDP would not involve other changes that could convert farmland to nonagricultural use. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of approximately 7.1 million gsf of new academic buildings and related support facilities, which could directly result in the conversion of farmland to nonagricultural uses.

As noted above, during the planning horizon of the 2005 LRDP, future development would be guided by a range of LRDP Planning Strategies (PS). With implementation of LRDP Planning Strategies *Land Use 2* (achieve densities of 1.0 FAR and maintain a compact and contiguous academic core) and *Land Use 3* (maintain teaching and research fields south of Martin Luther King Boulevard), described above under Impact 4.2-1, the direct conversion of agricultural land on the West Campus would be limited to the area north of Martin Luther King Boulevard and the pressure to convert agricultural land for low-density development would be reduced. Further, the LRDP Land Use Plan (refer to Figure 3-4, Project Description) illustrates how the proposed future development of 7.1 million square feet of buildings and additional recreation and parking facilities can be accommodated while preserving the agricultural teaching and research fields on the West Campus south of Martin Luther King Boulevard, which includes

the Citrus Variety Collection. Thus, no indirect effects on the agricultural teaching and research fields on the West Campus south of Martin Luther King Boulevard are anticipated.

The 2005 LRDP is a land use plan for the UCR campus and as such, would not result in any conversion of off-campus agricultural lands. Increases in the campus population could increase demand for near-campus housing (as discussed more fully in Section 4.11, Population and Housing) or for other retail goods and services. This could increase development pressure on near-campus agricultural lands. However, the only near-campus parcel that was recently being used for agriculture (as a citrus orchard) was approved for a single-family housing development in 2004, and construction of residential units on this parcel has begun. Thus, conversion of that land to nonagricultural uses is occurring irrespective of the implementation of the 2005 LRDP. Further, there is a small family Christmas tree lot located on Chicago south of Martin Luther King Boulevard, across from the agricultural reaching and research fields, that will remain in production following implementation of the 2005 LRDP. Thus, there would be no impact on this lot.

With implementation of the identified 2005 LRDP Planning Strategies, implementation of the 2005 LRDP would not involve other changes that would convert Prime Farmland to nonagricultural use and this impact would be *less than significant*.

4.2.5 Cumulative Impacts

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 and development of off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis).

From 1998 to 2000, a total of 16,917 acres of farmland, including Prime Farmland, Farmland of Statewide Importance, and Unique Farmland were converted to other uses in Riverside County. These lands were primarily converted to nonagricultural land uses. Regional development throughout the County, as projected by the Regional Comprehensive Plan and Guide prepared by Southern California Association of Governments, would continue the trend of converting agricultural lands to nonagricultural uses. Projected development would incrementally encroach onto agricultural uses as a result of residential, commercial, infrastructure, and other development. Additionally, the County of Riverside General Plan Program EIR (County of Riverside 2003, refer to Section 5.4 of that document) determined that the anticipated conversion of agricultural land to urban uses as a result of development in Riverside County would contribute to a cumulatively considerable impact on Prime Farmland, Unique Farmland, and Farmland of Statewide Importance.

As described above, in Impact 4.2-1, the on-campus agricultural research fields are classified as Prime Farmland and Farmland of Statewide Importance based on the classification system criteria of the NRCS. The conversion of a portion of the on-campus agricultural research fields to nonagricultural 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. However, the proposed project includes retention of agricultural lands in the Coachella Valley Agricultural Research Station by the campus. As described above in Impact 4.2-1, acquisition of agricultural land in the research station was undertaken to mitigate the potential development of campus agricultural land. However, as no new farmlands are being created in the vicinity of the campus, no feasible mitigation has been identified to reduce the direct loss of farmland. Therefore the conversion of approximately 125 acres of Prime Farmland into nonagricultural uses would contribute to the regional trend of loss of farmland. The contribution of the 2005 LRDP to cumulative impacts on Prime Farmland would be cumulatively considerable, the cumulative impacts are significant and unavoidable.

The UCR campus is zoned O ("Official" Zone) by the City of Riverside Zoning Code, which is intended for official and public uses of property and related activities. No portion of the UCR campus is specifically zoned for agricultural use, and no portion of the UCR campus is under a Williamson Act contract. Therefore, the project would not result in a cumulatively considerable contribution to cumulative impacts regarding conflicts with existing agricultural zoning or Williamson Act contracts. In addition, the loss of farmland on the UCR campus would not put pressure on adjacent, off-campus lands to be converted to non-agricultural uses. As described above in Impact 4.3-1, the only near-campus agricultural land was already cleared for single-family housing. As such, the conversion of that parcel to nonagricultural uses could occur even without implementation of the 2005 LRDP. Other farmland conversion within the City and County would occur in areas located several miles or more from the campus, and would not be affected by conversion of portions of the West Campus to agricultural uses. The contribution of the 2005 LRDP would not be cumulatively considerable, cumulative impacts would be less than significant.

4.2.6 References

California Department of Conservation. Division of Land Resource Protection. 2001. *The Farmland Mapping and Monitoring Program, Riverside County*. Table A-21, 1998-2000 Land Use Conversion.

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University of California, Davis. 2003. UC Davis Long Range Development Plan Program Draft Environmental Impact Report, SCH No. 2002102092. May

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4.3 AIR QUALITY

4.3.1 Introduction

This section evaluates the potential impacts on air quality resulting from implementation of the 2005 LRDP. This includes the potential for 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 *2003 Air Quality Management Plan* (AQMP), as amended; the UC Riverside LRDP EIR Traffic Impact Study (included as Appendix H); and the University of California, Riverside Health Risk Assessment (included as Appendix D). Bibliographic entries for reference materials appear in Section 4.3.6 (References) of this section.

Five comment letters related to air quality were written in response to the Notice of Preparation circulated for the project. Concern over air pollution from the parking structure planned for Lot 13 was expressed in one comment letter. In addition, commenters also requested that the EIR address excessive particulate pollution from trucks, air quality impacts from increased student population that will increase associated emissions from stationary facilities and vehicles, and consistency of LRDP air quality policies and impacts with applicable SCAG policies. One comment letter stated that the EIR should identify any potential adverse air quality impacts that could occur from all phases of the LRDP, including both construction and operational impacts. Additionally, the letter recommended that SCAQMD's 1993 *CEQA Air Quality Handbook* be used in preparation of the EIR, including Chapter 11, which includes sample air quality mitigation measures. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.3.2 Existing Conditions

Air Quality Background

The UCR campus is located within the South Coast Air Basin (Basin); named so because its geographical formation is that of a basin, with the surrounding mountains trapping the air and its pollutants in the valleys or basins below. This area includes all of Orange County and the non-desert portions of Los Angeles, San Bernardino, and Riverside Counties. The regional climate within the Basin is considered semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. The air quality within the Basin is primarily influenced by a wide range of emissions sources—such as dense population centers, heavy vehicular traffic, and industry—and meteorology.

Air pollutant emissions within the Basin are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at an identified location and are usually associated with manufacturing and industry. Examples are boilers or combustion equipment that produces electricity or generates heat. Area sources are widely distributed and produce many small emissions. Examples of area sources include residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and consumer products such as barbeque lighter fluid and hair spray. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and self-propelled construction equipment. Mobile sources account for the majority of the air pollutant emissions within the Basin. Air pollutants can also be generated by the natural environment such as when fine dust particles are pulled off the ground surface and suspended in the air during high winds.

Both the federal and State governments have established ambient air quality standards for outdoor concentrations of various pollutants in order to protect public health. The federal and State standards have been set at levels which concentrations could be generally harmful to human health and welfare, and to protect the most sensitive persons from illness or discomfort with a margin of safety. Applicable standards are identified below in this EIR section. The SCAQMD is responsible for bringing air quality within the Basin into conformity with the federal and State standards.

The air pollutants for which federal and State standards have been promulgated and which are most relevant to air quality planning and regulation in the Basin include ozone, carbon monoxide (CO), fine particulate matter (PM_{10}), sulfur dioxide (SO_2), and lead. In addition, toxic air contaminants are of concern in the Basin. Each of these is briefly described below.

- *Ozone* is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx)—both byproducts of internal combustion engine exhaust—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.
- *Carbon Monoxide* is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during the winter morning, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines—unlike ozone—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.
- *Respirable Particulate Matter* (PM_{10}) and *Fine Particulate Matter* ($PM_{2.5}$) consists of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter. Some sources of particulate matter, like pollen and windstorms, are naturally occurring. However, in populated areas, most particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.

- *Sulfur dioxide* 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.
- *Lead* 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. Other sources of lead include the manufacturing and recycling of batteries, paint, ink, ceramics, ammunition, and secondary lead smelters.
- *Toxic Air Contaminants* refer to a diverse group of air pollutants that can affect human health, but have not had ambient air quality standards established for them. This is not because they are fundamentally different from the pollutants discussed above, but because their effects tend to be local rather than regional.

Existing Regional Air Quality

The entire Basin is designated as a federal-level nonattainment area for ozone, meaning that federal standards are not expected to be met for more than 17 years, and a nonattainment area for CO, and PM_{10}. It has recently improved from nonattainment to attainment with the federal standard for nitrogen dioxide (NO_2)—a pure form of NOx. The Basin is a State-level nonattainment area for ozone, CO (Los Angeles County only), and PM_{10}.

In an effort to monitor the various concentrations of air pollutants throughout the Basin, the SCAQMD has divided the region into 27 source receptor areas (SRAs) in which 31 monitoring stations operate. The UCR campus is located within SRA 23, which covers Metropolitan Riverside County. Ambient air pollutant concentrations within SRA 23 are monitored at two locations in Riverside and Rubidoux. Table 4.3-1 (Summary of Ambient Air Quality in the Project Vicinity) identifies the national and State ambient air quality standards for relevant air pollutants along with the ambient pollutant concentrations that have been measured within SRA 23 through the period of 2000 to 2002.

Table 4.3-1 Summary of Ambient Air Quality in the Project Vicinity

Air Pollutants Monitored Within SRA 23—Metropolitan Riverside County[a]	*Year*		
	2000	*2001*	*2002*
Ozone			
Maximum 1-hour concentration measured	0.14 ppm [a]	0.143 ppm	0.155 ppm
Number of days issued 0.15 ppm 1-hour Health Advisory notice	0	0	1
Number of days exceeding national 0.12 ppm 1-hour standard	3	7	12
Number of days exceeding State 0.09 ppm 1-hour standard	41	41	56
Maximum 8-hour concentration measured	0.113 ppm	0.120 ppm	0.08 ppm
Number of days exceeding national 0.08 ppm 8-hour standard	29	34	38
Nitrogen Dioxide (NO_2)			
Maximum 1-hour concentration measured	0.10 ppm	0.15 ppm	0.10 ppm
Number of days exceeding State 0.25 ppm 1-hour standard	0	0	0
Annual arithmetic mean (AAM)	0.0236 ppm	0.0247 ppm	0.0237 ppm

Table 4.3-1 Summary of Ambient Air Quality in the Project Vicinity

Air Pollutants Monitored Within SRA 23—Metropolitan Riverside County[a]	*Year*		
	2000	*2001*	*2002*
Does measured AAM exceed national 0.0534 ppm AAM standard?	No	No	No
Carbon Monoxide (CO)			
Maximum 1-hour concentration measured	5.0 ppm	5.0 ppm	8.0 ppm
Number of days exceeding national 35.0 ppm 1-hour standard	0	0	0
Number of days exceeding State 20.0 ppm 1-hour standard	0	0	0
Maximum 8-hour concentration measured	4.3 ppm	3.4 ppm	3.0 ppm
Number of days exceeding national and State 9.0 ppm 8-hour standard	0	0	0
Respirable Particulate Matter (PM_{10})			
Maximum 24-hour concentration measured	139 $\mu g/m^3$ [b]	136 $\mu g/m^3$	130.0 $\mu g/m^3$
Number of days exceeding national 150 µg/m3 24-hour standard	0	0	0
Number of days exceeding State 50 µg/m3 24-hour standard	68	78	81
Annual arithmetic mean (AAM)	60.1 $\mu g/m^3$	63.1 $\mu g/m^3$	58.5 $\mu g/m^3$
Does measured AAM exceed national 50.0 $\mu g/m^3$ AAM standard?	Yes	Yes	Yes
Does measured AAM exceed State 20.0 $\mu g/m^3$ AAM standard?	Yes	Yes	Yes
Fine Particulate Matter ($PM_{2.5}$)			
Maximum 24-hour concentration measured	119.6 $\mu g/m^3$ [b]	98.0 $\mu g/m^3$	77.6 $\mu g/m^3$
Number of days exceeding national 65.0 $\mu g/m^3$ 24-hour standard	11	19	6
Annual arithmetic mean (AAM)	28.2 $\mu g/m^3$	31.1 $\mu g/m^3$	27.5 $\mu g/m^3$
Does measured AAM exceed national 15.0 $\mu g/m^3$ AAM standard?	Yes	Yes	Yes
Does measured AAM exceed State 12.0 $\mu g/m^3$ AAM standard?	Yes	Yes	Yes
Sulfur Dioxide (SO_2)			
Maximum 1-hour concentration measured	0.02 ppm	0.02 ppm	0.02 ppm
Number of days exceeding State 0.25 ppm 1-hour standard	0	0	0
Maximum 24-hour concentration measured	0.008 ppm	0.011 ppm	0.002 ppm
Number of days exceeding national 0.14 ppm 24-hour standard	0	0	0
Number of days exceeding State 0.04 ppm 24-hour standard	0	0	0
Lead			
Maximum 30-day average measured	0.03 $\mu g/m^3$	0.07 $\mu g/m^3$	0.03 $\mu g/m^3$
Number of months exceeding State 1.5 $\mu g/m^3$ 30-day standard	0	0	0
Maximum calendar quarter concentration measured	0.02 $\mu g/m^3$	0.05 $\mu g/m^3$	0.02 $\mu g/m^3$
Number of calendar quarters exceeding national 1.5 $\mu g/m^3$ standard	0	0	0

Sources: ARB 2003; SCAQMD 2001, 2002, 2003

Ambient concentrations of NO_2, SO_2, and lead do not exceed national and State standards anywhere within the South Coast Air Basin.

[a] ppm = parts by volume per million of air

[b] $\mu g/m^3$ = micrograms per cubic meter

Existing Local Air Quality

Motor vehicles are the primary source of pollutants in the campus vicinity. Traffic-congested roadways and intersections have the potential to generate localized high levels of CO. Localized areas where ambient concentrations exceed federal and/or State standards for CO are termed CO "hotspots." Section 9.4 of the SCAQMD's *CEQA Air Quality Handbook* identifies CO as a localized problem requiring additional analysis when a project is likely to subject sensitive receptors to CO hotspots.

The SCAQMD recommends the use of CALINE4, a dispersion model for predicting CO concentrations, as the preferred method of estimating pollutant concentrations at sensitive receptors near congested roadways and intersections. For each intersection analyzed, CALINE4 adds roadway-specific CO emissions calculated from peak-hour turning volumes to ambient CO air concentrations. For this analysis, CO concentrations were calculated based on a simplified CALINE4 screening procedure developed by the Bay Area Air Quality Management District and accepted by the SCAQMD. The simplified model is intended as a screening analysis, which identifies a potential CO hotspot. This methodology assumes worst-case conditions and provides a screening of maximum, worst-case CO concentrations.

Maximum CO concentrations were calculated for 35 intersections in close proximity to the project site. The results of these calculations are presented in Table 4.3-2 (Existing Localized Carbon Monoxide Concentrations) for representative receptors located 25, 50, and 100 feet from each roadway. As shown, under worst-case conditions, existing CO concentrations near these intersections do not exceed national or State ambient air quality standards. Therefore, CO hotspots do not exist near these intersections.

Table 4.3-2 Existing Localized Carbon Monoxide Concentrations

	CO Concentrations in Parts per Million					
	25 feet		50 Feet		100 Feet	
Intersection	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
3rd Street & Kansas Avenue	10.1	4.9	9.8	4.8	9.6	4.7
3rd Street & Chicago Avenue	10.3	5.1	10.1	4.9	9.8	4.8
3rd Street & SR-60 Southbound Ramp	10.3	5.1	10.0	4.9	9.7	4.7
Blaine Street & SR-60 Northbound Ramp	10.2	5.0	9.9	4.9	9.7	4.7
Blaine Street & Iowa Avenue	11.4	5.7	10.9	5.4	10.3	5.1
Blaine Street & Canyon Crest Drive	10.3	5.1	10.1	4.9	9.8	4.8
Blaine Street & Watkins Dr.	10.5	5.2	10.2	5.0	9.8	4.8
Linden Street & Chicago Avenue	10.3	5.1	10.0	4.9	9.7	4.7
Linden Street & Iowa Avenue	10.5	5.2	10.2	5.0	9.8	4.8
Linden Street & Canyon Crest Drive	10.3	5.1	10.0	4.9	9.7	4.7
University Avenue & Kansas Avenue	10.4	5.1	10.1	5.0	9.8	4.8
University Avenue & Chicago Avenue	10.9	5.4	10.5	5.2	10.1	4.9
University Avenue & Iowa Avenue	11.1	5.5	10.6	5.3	10.2	5.0
University Avenue & SR-60 Southbound Ramp	10.4	5.1	10.1	4.9	9.8	4.8
University Avenue & SR-60 Northbound Ramp	10.5	5.2	10.1	5.0	9.8	4.8

Table 4.3-2 Existing Localized Carbon Monoxide Concentrations

Intersection	CO Concentrations in Parts per Million					
	25 feet		50 Feet		100 Feet	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
University Avenue & Campus Drive	10.0	4.9	9.8	4.8	9.6	4.6
Martin Luther King Blvd.& Chicago Avenue	11.9	6.0	11.3	5.7	10.6	5.3
Martin Luther King Blvd. & Iowa Avenue	10.6	5.3	10.3	5.1	9.9	4.8
Martin Luther King Blvd. & Canyon Crest Drive	11.6	5.9	11.1	5.5	10.5	5.2
Central Avenue & Chicago Avenue	11.8	6.0	11.2	5.6	10.6	5.3
Central Avenue & Canyon Crest Drive	12.9	6.6	12.1	6.2	11.2	5.6
Central Avenue & Sycamore Canyon Boulevard	11.1	5.6	10.6	5.3	10.2	5.0
Big Springs Road & Watkins Drive	11.0	5.5	10.5	5.2	10.1	4.9
Martin Luther King Blvd. & SR-60 Southbound Ramp	11.2	5.6	10.7	5.3	10.2	5.0
Le Conte Drive & Chicago Avenue	10.5	5.2	10.2	5.0	9.8	4.8
El Cerrito Drive & Sycamore Canyon	11.2	5.6	10.7	5.3	10.2	5.0
Central Avenue & SR-60 Southbound Ramp	11.1	5.6	10.6	5.3	10.1	5.0
Central Avenue & SR-60 Northbound Ramp	11.1	5.6	10.6	5.3	10.1	5.0
Linden Street & Aberdeen Drive	10.4	5.1	10.1	5.0	9.8	4.8
Campus Dr. & Aberdeen Dr.	10.3	5.1	10.0	4.9	9.7	4.7
Big Springs Road & Campus Drive	10.1	4.9	9.8	4.8	9.6	4.7
Parking Lot 1 & Campus Drive	10.5	5.2	10.1	5.0	9.8	4.8
Campus Drive & Canyon Crest Drive	10.6	5.2	10.2	5.0	9.9	4.8
Campus Drive & Citrus Drive	9.5	4.6	9.4	4.5	9.3	4.5
Eucalyptus Drive & Campus Drive	9.4	4.5	9.3	4.5	9.2	4.4

Source: EIP Associates, 2003. Calculation sheets are provided in Appendix C.
Federal 1-hour standard is 35.0 parts per million. State 1-hour standard is 20.0 parts per million.
Federal 8-hour standard is 9.5 parts per million. State 8-hour standard is 9.1 parts per million.

Existing Campus Emissions

The 1,112-acre UCR campus has been developed with a variety of academic and related uses, with facilities dedicated to instruction, research, support functions, recreation, and housing. Existing air emissions from the campus are generated by construction equipment, water and space heating equipment, chiller facilities, educational and research activities, landscape maintenance equipment, consumer products, and motor vehicle trips. The existing average daily emissions generated by the uses and activities at the campus are presented in Table 4.3-3 (Existing Daily Operational Campus Emissions). As shown, motor vehicles are the primary source of air pollutant emissions associated with the UCR campus.

Table 4.3-3 Existing Daily Campus Emissions

Emissions Source	Emissions in Pounds per Day				
	CO	VOC	NO_x	SOx	PM_{10}
Construction Activities	112.4	8.4	46.4	0.0	2.3
Water & Space Heating/Cooling	9.0	2.4	53.8	0.0	0.1
Landscape Maintenance	41.4	4.7	0.8	0.0	0.1
Consumer Products		66.3			
Motor Vehicles	5,019.8	381.0	508.8	2.8	407.5
Total Emissions	***5,182.6***	***462.8***	***609.8***	***2.8***	***410.0***

Source: EIP Associates, 2003. Calculation data and results are provided in Appendix C.

Existing Campus Air Quality Control

The average daily emissions identified in Table 4.3-3 would be substantially higher were it not for numerous programs that are implemented by the campus to reduce air pollutants, energy demand (thereby reducing associated energy generation emissions), and motor vehicle trips. These programs are discussed below.

Stationary Source Controls

All stationary sources of emissions recently constructed and operated within the UCR campus have incorporated Best Available Control Technology (BACT) as part of the permit requirements from the SCAQMD to control the overall amount of emissions that these sources generate. Under SCAQMD rules, BACT is defined as the most stringent emissions control which, for a given class of air pollutant source, has been achieved in practice, identified in a State Implementation Plan, or has been found by the SCAQMD to be technologically achievable and cost-effective. Primary sources of the stationary source emissions generated at the UCR campus include the central chiller plant, which produces chilled water (for air conditioning and cooling) for the East Campus core. Other in-building and auxiliary stand-alone chillers are located within the campus to produce additional chilled water for air conditioning and cooling needs, particularly for housing and on the West Campus.

Energy Conservation

The campus currently employs energy conservation measures in all new as well as renovated construction on campus, in accordance with all applicable State energy conservation requirements. Energy conserving measures incorporated into new projects include (1) installation of thermal insulation in walls and ceilings, especially for air conditioned buildings; (2) installation of high energy efficiency refrigerators in future on-campus housing units; (3) incorporation of passive solar features where cost effective in the architectural design of new campus buildings; and (4) installation of time controlled public area lighting, as funds are available, for interior and exterior areas as to limit lighting to levels necessary for the safety of person or property. The campus also has two Thermal Energy Water Storage Tanks at the upper elevations of the campus which allows the campus to cool water for air conditioning

at night during off peak hours (lower electricity demand in addition to lower cost) and allow for gravity feed of the cold water to air condition buildings during the daytime. This saves substantial peak hour electricity for other needs in the City of Riverside as well as save electricity costs for the campus. In addition, using steam to heat campus buildings further reduces campus demand for natural gas by eliminating its direct use to heat individual campus structures. All of these measures reduce the amount of air pollutant emissions that would otherwise be generated through the generation of additional electricity and use of natural gas.

Alternative Transportation

The UCR campus is well served by several modes of alternative transportation. Viable transit opportunities include public bus services provided by outside operators and a campus-operated shuttle bus service. These services not only offer an alternative means by which to commute to the campus, but also provide the opportunity to reduce the need for a car once at UCR through the ability to utilize shuttles to get around the campus.

Public Transit

The UCR campus area is served by two public transit operators: the Riverside Transit Agency and Metrolink. The RTA operates numerous routes in the area, including the Orange Blossom Express, which connects the campus to University Avenue and the downtown bus terminal, and Route 13, which provides access to areas south of the campus, including the Riverside Airport. The Metrolink Light Rail system includes several routes through Riverside, including the Inland Empire-Orange County Line, the Riverside line, and the 91 line (linking Riverside, Fullerton, and Downtown Los Angeles). When transfer opportunities are considered, these public transit routes provide transit service to much of the region.

Campus Transit

In addition to the public transit routes described above, UCR Transportation and Parking Services (TAPS) provides free shuttle bus service called the Highlander Hauler. The service operates two routes (Blue and Gold) throughout the day, transporting members of the campus community to and from their residence within a three- to 5-mile radius, the main campus, as well as University Extension, University Village, the Riverside Sports Center, the Canyon Crest Towne Centre and various apartment complexes surrounding UCR. In the summer, the Hauler operates on limited time schedule on the regular Blue and Gold routes. In addition, a Trolley Express service transports students back and forth every ten minutes from University Village, University Extension, and the Grand Marc Apartments directly to the campus interior. The Transit Services unit also offers free evening shuttle service to UCR faculty, staff, and students, referred to as Point-to-Point (P2P) service and a trolley to the Metrolink station.

Alternative Transportation Program

UCR has implemented an Alternative Transportation (AT) program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The goal of 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. Programs and services are available to UCR faculty, staff, and students.

SCAQMD requires a survey of all campus employees to determine Average Vehicle Ridership[8] (AVR). UC Riverside attained an AVR of 1.52 in 2002, which exceeds the 1.5 AVR goal. The outcome represents a gain of 0.21 from the 1.31 AVR attained in 2001. This increase was potentially achieved in part through the improved survey response rate, which increased 9 percent over 2001. In addition, the survey was completed in the spring, which provided more representative data than the Fall 2001 survey, due to the unique commute patterns of the University population.

The specific components of the AT program may change over time as the campus strives for the most cost-effective manner by which to continue to achieve its required goals, so long as the overall effectiveness of the Program is not compromised. A description of various components of the current AT program is provided below.

Alternative Transportation Smart Card

UCR offers the Alternative Transportation Smart Card (AT Card) to those participating in alternative transportation programs. The AT Card contains the dollar equivalent of the free parking allotment; participants are allotted a maximum of 48 full days parking usage per fiscal year. Participants use the AT Card to purchase a parking permit on days they drive to campus. Participants in the biking and walking program can also purchase a night permit and remain eligible for the AT program incentives. This option is particularly beneficial for the person that bikes/walks to campus during the day and finds they must regularly return at night. This card is available to bikers, walkers, nonpermit-holding members of a carpool, vanpool participants, commuters who use RTA or Metrolink as their main mode of transportation, participants in the drop-off program.

Carpool Matching

Carpool matching is performed by the Employee Transportation coordinator, who organizes carpool and vanpool formation meetings on a quarterly basis. In addition, TAPS website, the Transportation and Parking Services office, and information kiosks provide an explanation of carpooling options, including an explanation of the convenience and money-saving options of carpool parking permits. UCR participates in *Advantage Rideshare* and *Option Rideshare*, programs offered by Riverside County and San Bernardino County. These programs offer an incentive to commuters new to ridesharing during the first 90 days of participation. In year 2000, there were a total of 350 employee carpools at UCR.

Vanpool

All faculty, staff, and graduate students who commute to campus are eligible to participate in the UCR Vanpool Program. There are currently five vanpools that provide transportation to and from campus Monday through Friday. Vanpools arrive from and return to Menifee, Orange County, Redlands, and

[8] The AVR is the ratio of employees arriving between 6 A.M. and 10 A.M. to the motor vehicles they drive to campus.

Murrieta. UCR vanpools do not run on weekends or campus holidays. Vanpool riders are also eligible to participate in the Guaranteed Ride Home program, a valuable benefit in emergency situations.

Guaranteed Ride Home

To further support the campus carpooling and vanpooling efforts, TAPS has a "Guaranteed Ride Home" program that offers full-time vanpool and carpool participants who must get home during the day for a family emergency or who have to work late has vehicles available for emergency lease. This service is provided to participants once a quarter without charge.

Drop-Off Program

The campus recognizes the ability for full-time faculty, staff, and graduate students to be dropped off at campus each day, and do not require a parking permit. Drop-off participants are distinguished from a carpool participant based on their partner. Drop off program participants have partners that work off campus; they do not park a vehicle on campus. There are currently no benefits to the program participants.

Bicycles

To support and encourage bicycling to campus safely and comfortably, UCR provides bicycle spaces throughout the campus, as well as access to on-campus shower facilities located in the Physical Education Facility. The AT program pays the quarterly dues for the Physical Education Facility. New participants are eligible to receive a full-use membership at the Physical Education Facility for up to two quarters of participation in the AT program (quarters must be consecutive). At the end of the two-quarter period, Alternative Transportation will continue to pay for the use of showers and lockers for continuing participants. The campus also participates in bicycle to work day to promote bicycle use.

Telecommuting and Alternative Work Schedules

Transportation Services continues to encourage all campus groups to consider telecommuting and alternative work schedules, including a compressed workweek and flextime schedules. Information about these programs is available through Campus Human Resources and Transportation Services.

Alternative Transportation Outreach

As part of the AT program, UCR provides a transit information center that makes general transit information available (route maps and schedule information). UCR publicizes the availability and convenience of alternative transportation modes to the campus through Ridesharing brochures, the Transportation and Parking Services (TAPS) Website (www.parking.ucr.edu/), annual commuter fairs, and presentation and distribution of information at new student and employee orientation sessions. Public transit is also actively promoted through the Riverside Transit Authority route information and schedule brochures available at the TAPS office on campus, as well as on the TAPS Website. The website provides extensive information regarding commuting regularly to campus using public transit, including

links to local public transit providers' published schedules and maps and inexpensive ways to travel to off-campus locations, such as the airport or Metrolink commuter rail stations.

Bus Fare Subsidy Program

Faculty, staff, and students who have not purchased a regular parking permit are eligible to purchase one monthly RTA bus pass at a 50 percent discount from the full price fare. The current discounted price for a monthly RTA bus pass is $17.00. Monthly bus passes are available for purchase at the TAPS office, three days prior to the beginning of the month.

Discounted Metrolink passes are now available for faculty and staff members who have not purchased a regular parking permit. Monthly passes and 10-trip tickets can be purchased at the TAPS office. Participants receive a 15 percent discount on the face value of the ticket.

Metrolink's College Discount Program offers discounted fares to students enrolled in a minimum of 12 in-class hours a month, or a minimum of 12 units. Monthly passes or 10-trip tickets for the most frequently requested Riverside routes are available at TAPS.

UCR offers a free Metrolink Shuttle service to faculty and staff members. The shuttle runs from the Downtown Riverside station to campus several times daily. As space permits, the shuttle will also transport students to the Downtown station.

On-Campus Housing

Another campuswide development objective articulated in the 2005 LRDP relates to the provision of on-campus housing, in part, as a component of transportation management. As of fall 2001, 3,472 students were provided with university housing. The 2005 LRDP targets a housing goal of 50% for students on campus.

Existing Toxic Air Contaminant Emissions

Toxic air contaminants are airborne substances that are capable of causing chronic (i.e., of long duration) and acute (i.e., severe but of short duration) adverse effects on human health. They include both organic and inorganic chemical substances that may be emitted from a variety of common sources including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities. Toxic air contaminants are different than the "criteria" pollutants previously discussed in that ambient air quality standards have not been established for them.

A Health Risk Assessment (HRA) was performed to estimate the potential health risks associated with toxic air contaminants generated by implementation of the 2005 LRDP and is included as Appendix D of this EIR. The health effect categories evaluated in the HRA conducted for the 2005 LRDP include the following:

- Lifetime risk of developing cancer for potentially exposed individuals
- Potential for chronic or long-term noncancer effects

- Potential for acute or short-term noncancer effects

On- and off-campus receptors were evaluated in the HRA. These receptors included residents living on campus and residents in the immediate vicinity of the campus since they would be exposed to the highest concentrations of pollutants generated at the campus. The HRA assumes absolute worst-case conditions in which the same resident was assumed to be at the location of the maximum predicted concentration for each pollutant source. While it is not physically possible to be located at the point of maximum predicted concentration simultaneously for all sources within the 600.8-acre East Campus where almost all of the current campus development is located, this approach provides a substantial level of conservatism that is protective for the modeling approach. The actual cumulative exposures for any one residential location within the campus and surrounding community are likely to be substantially less than predicted in the HRA. Please refer to Appendix D of this EIR for a detailed description of the methodology employed for the HRA.

The following discussion identifies the existing potential for health risks to sensitive receptors located within the UCR campus.

Existing Sources of Toxic Air Contaminants

The UCR campus conducts routine operations that generate emissions regulated by the State of California. The primary processes contributing to the current release of toxic air contaminants include the following (listed below in alphabetical order):

- Boilers
- Diesel emergency generators
- Diesel storage/dispensing
- Gasoline storage/dispensing
- Incinerator[9]
- Kitchens
- Laboratory fume hoods
- Refrigerants
- Spray booth

These processes result in a total of 14 point source locations (i.e., emissions from a stack or single point location) and three area emission sources (i.e., emissions in a general area with limited vertical velocity). The HRA evaluated the toxic emissions associated with these sources based on fuel, material, and chemical usage considered representative of the current year-to-year routine campuswide operations.

Existing Lifetime Cancer Risk

Lifetime cancer risk is defined as the increased chance of contracting cancer over a 70-year period as a result of exposure to a toxic substance or substances. It is the product of the estimated daily exposure of

[9] The incinerator is used by the biology department for animal carcasses.

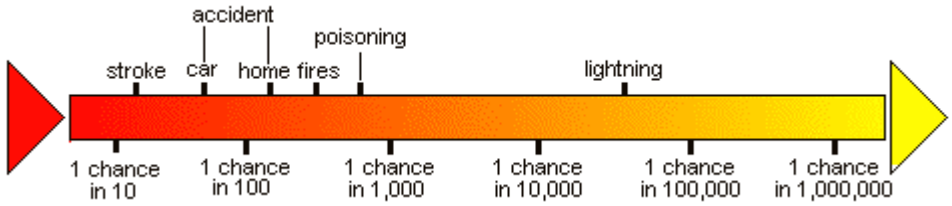
each suspected carcinogen by its respective cancer unit risk. The end result represents a worst-case estimate of cancer risk by assuming that an individual would be exposed to the same toxic substance at the same location continually for 70 years.

Risk characterization combines the results of the exposure and dose-response assessments to estimate the potential for adverse health effects as represented by the probability for an individual to contract cancer beyond the normal background likelihood. Risk analysts describe risks numerically in scientific notation; for example 1×10^{-6} means that there is one chance in 1,000,000 of an event occurring. The California Air Pollution Control Officers Association (CAPCOA) Risk Assessment Guidelines establish an upper threshold of 10 in one million for acceptable cancer health risk. The SCAQMD also recommends the use of this threshold to determine acceptable cancer heath risk. Cancer risk is defined as the worst-case probability of an individual developing cancer over a lifetime as a result of an exposure to potential carcinogens. The cancer risk level is intended to ensure a sufficient safety margin to prevent a single project or activity from causing a substantial contribution to the overall number of cancer cases in an area. It is not intended or designed to serve as a means to evaluate cumulative risk associated with multiple activities not associated with the project in question or to assess risk posed by ambient background conditions.

The conclusions of an HRA must be considered in context. As a general matter, the background probability of an individual contracting cancer in one's lifetime is 333,000 in one million; that is, one in three people will contract cancer in their lifetime. This overall probability of contracting cancer can be influenced by diet, smoking, heredity, chemicals in the environment and the workplace, and other factors. An individual source of toxic air contaminants that would result in less than 10 excess cancer cases in one million is unlikely to cause a substantial increase in the overall number of cancer cases that would otherwise occur.

It should be recognized that when small populations are exposed, population risk estimates may be very small. For example, if 100 people are exposed to an individual lifetime cancer risk of one in 100,000 or 1×10^{-5}, the expected number of cases is 0.001. For risk assessment purposes, the HRA evaluated impacts both on-campus and off-campus. For risk assessment purposes, a lifetime exposure for the general population (off-campus) is considered to be 70 years, 365 days a year, 24 hours per day. Given the nature of the campus population, (on-campus) and the length of time that any individual is likely to remain on campus during their lifetime, a 5 year exposure is used in the analysis. It should further be recognized that an HRA does not calculate the exact risk for all individuals, but a hypothetical risk assuming that all of a series of "worst-case scenario" exposure assumptions apply, such as the maximally exposed individual does not move from the specific worst-case location and worst-case wind conditions do not change. The chance that an individual would be exposed to any one of these exposure assumptions is small, and is even smaller for all assumptions to occur simultaneously (e.g., 70 years of continuously breathing air at the location of maximum impact). Thus, an individual's actual risk is likely to be substantially over-estimated by the recommended methodology of an HRA.

It is also important to place health risk and the assessment of probability in the context of daily activity. To provide an idea of the size of risks from environmental hazards, the following continuum provides risk statistics for some familiar events (U.S. EPA 1991).



Comparative Risk Probabilities

The cancer risk as a result of a exposure to emissions from the routine campuswide operation of all existing (academic year 2004-05) sources at the UCR campus was estimated to be 0.66 in one million (6.64×10^{-7}) on-campus (i.e., student housing within the campus). Potential risks at all other locations within the campus would be lower. The existing off-campus cancer risk was estimated to be 4.99 in one million (4.99×10^{-6}). The off-campus cancer risk reflects lifetime exposure of an individual, and the on-campus cancer risk reflects exposure over a 5-year period on the campus. The difference in the magnitude of the risk on-campus as compared to off-campus reflects this variation. The estimated values are below the 10-in-one-million threshold for acceptable incremental cancer health risk established by CAPCOA and the SCAQMD. Refer to Appendix D for additional detail.

Existing Noncancer Health Effects

The potential for emissions from routine campuswide operations to cause both chronic and acute noncancer health effects was also assessed in the HRA. Guidance published by the California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA) and the CAPCOA AB 2588 guidelines specify which substances are to be evaluated in the noncancer effects assessment and which organ systems within the body are affected (e.g., liver, kidney, respiratory system, and central nervous system).

Results of the chronic and acute noncancer health effects assessment for UCR indicate that all of the hazard index (HI) values for each organ system are less than 1.0. Chronic and acute HI values less than 1.0 indicate that noncancer effects from chronic exposure to emissions from routine campuswide operations are unlikely. The maximum chronic HI for an organ system is 0.004 off campus and 0.003 on campus, which is substantially below 1.0. The maximum acute HI for an organ system is 0.07 off campus and 0.03 on campus, also substantially below 1.0. Potential health effects at all other locations within the campus and surrounding vicinity would be lower.

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

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.

Federal and State

U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (U.S. EPA) is responsible for setting and enforcing the federal ambient air quality standards for atmospheric pollutants. It 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 has jurisdiction over emissions sources outside State waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California.

As part of its enforcement responsibilities, the U.S. EPA requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution, using a combination of performance standards and market-based programs within the timeframe identified in the SIP.

California Air Resources Board

The California Air Resources Board (ARB), a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both federal and State air pollution control programs within California. In this capacity, the ARB conducts research, sets California Ambient Air Quality Standards, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. The ARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hair spray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

South Coast Air Quality Management District (SCAQMD)

The SCAQMD is the agency principally responsible for comprehensive air pollution control in the Basin. To that end, the SCAQMD, a regional agency, works directly with SCAG, county transportation commissions, local governments, and cooperates actively with all State and federal government agencies. The SCAQMD develops rules and regulations, establishes permitting requirements, inspects emissions sources, and enforces such measures though educational programs or fines, when necessary.

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources. It has responded to this requirement by preparing a series of Air Quality Management Plans (AQMPs). The most recent of these was adopted by the Governing Board of the SCAQMD on August 1, 2003. This AQMP, referred to as the 2003 AQMP, was prepared to comply with the federal and State Clean Air Acts and amendments, to accommodate growth, to reduce the high pollutant levels of pollutants in the Basin, to meet federal and State air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. It identifies the control

measures that will be implemented to reduce major sources of pollutants. These planning efforts have substantially decreased the population's exposure to unhealthful levels of pollutants, even while substantial population growth has occurred within the Basin. As discussed on page 2-7 of the 2003 AQMP, level of ambient pollutants monitored in the Basin have decreased substantially since 1980.

The future air quality levels projected in the 2003 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 Regional Comprehensive Plan and Guide (RCPG), which was adopted in March 1996. The AQMP also assumes that general development projects will include strategies (mitigation measures) to reduce emissions generated during construction and operation.

4.3.4 Impacts and Mitigation Measures

Methodology

Because the proposed project is still in a conceptual development phase and has not been designed, no site-specific drawings that depict the academic buildings, residential structures, and other project features have been developed. Therefore, the proposed project 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.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on air quality if it would result in any of the following:

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

As the agency principally responsible for comprehensive air pollution control in the Basin, the SCAQMD recommends that projects should be evaluated in terms of air pollution control thresholds established by the SCAQMD and published in the *CEQA Air Quality Handbook*. These thresholds were developed by the SCAQMD to provide quantifiable levels that projects can be compared to. The campus utilizes the SCAQMD's thresholds that are recommended at the time that development projects are proposed to assess the significance of quantifiable impacts. The following quantifiable thresholds are currently

recommended by the SCAQMD and are used to determine the significance of air quality impacts associated with the 2005 LRDP.

Construction Emissions Thresholds

The SCAQMD currently recommends that projects with construction-related emissions that exceed any of the following emissions thresholds should be considered significant. The SCAQMD also recommends that any construction-related emissions from individual development projects that exceed these thresholds be considered cumulatively considerable. These thresholds apply to individual development projects only; they do not apply to the emissions generated by related projects:

- 550 pounds per day of CO
- 75 pounds per day of VOC
- 100 pounds per day of NOx
- 150 pounds per day of SOx
- 150 pounds per day of PM_{10}

Operational Emissions Thresholds

The SCAQMD currently recommends that projects with operational emissions that exceed any of the following emissions thresholds should be considered significant. The SCAQMD also recommends that any operational emissions from individual projects that exceed these thresholds be considered cumulatively considerable. These thresholds apply to individual development projects only; they do not apply to the emissions generated by related projects:

- 550 pounds per day of CO
- 75 pounds per day of VOC
- 100 pounds per day of NOx
- 150 pounds per day of SOx
- 150 pounds per day of PM_{10}

The SCAQMD also recommends that projects that could emit carcinogenic or toxic air contaminants that exceed the maximum individual cancer risk of 10 in one million be considered significant and cumulatively considerable.

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to Be Significant with respect to air quality; therefore, all potential air quality impacts are discussed in this section of the EIR.

Impacts and Mitigation

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

Impact 4.3-1 **Implementation of the 2005 LRDP would not conflict with or obstruct implementation of the Air Quality Management Plan for the South Coast Air Basin. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities intended to accommodate a student enrollment of 25,000 students. This would increase the amount of construction on campus, increasing both operational emissions and mobile source emissions.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies 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*

PS Conservation 5 — *Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.*

In addition, continued implementation of existing campus Programs and Practices (PP) would is relevant to transportation programs:

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.)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, intended to accommodate an enrollment of 25,000 students.

The 2003 Air Quality Management Plan (AQMP), discussed previously, was prepared to accommodate growth, to reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, to return clean air to the region, and to minimize the impact on the economy. Projects that are considered to be consistent with the AQMP would not interfere with attainment because this growth is included in the projections utilized in the formulation of the AQMP. Therefore, projects, uses, and activities that are consistent with the applicable assumptions used in the development of the AQMP would not jeopardize attainment of the air quality levels identified in the AQMP, even if they exceed the SCAQMD's recommended daily emissions thresholds.

Projects that are consistent with the projections of employment and population forecasts identified in the Growth Management Chapter of the RCPG are considered consistent with the AQMP growth projections, since the Growth Management Chapter forms the basis of the land use and transportation control portions of the AQMP.

The UCR campus is located within the Riverside County subregion of the RCPG. SCAG estimates that population within Riverside County will increase from 504,507 persons in 2000 to 720,452 persons by 2015. As discussed in Impact 4.11-1, in Section 4.11 (Population and Housing) the 2005 LRDP would contribute approximately 17,899 persons to this growth. The projected growth in campus population by 2015 is within the SCAG projections through growth rate assumptions, since the LRDP would serve future growth in the region (personal communication, Jihong McDermott, SCAG). 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.

The 2005 LRDP contains specific planning objectives aimed at reducing vehicle miles traveled and providing alternative methods of transportation, as well as land use policies integrating walkways with building design to encourage pedestrian use through placement and design. These planning principles would serve to encourage the use of transit, reduce the number of vehicle trips and miles traveled, and create further opportunities for campus students, faculty, and staff to walk and bike to campus. The LRDP Planning Strategies and the existing campus Program and Practice identified above are consistent with the goals of the AQMP for reducing the emissions associated with new development.

Based on this information, the 2005 LRDP is consistent with the 2003 AQMP.

With implementation of the identified LRDP Planning Strategies, and continued implementation of existing campus Program and Practice, implementation of the 2005 LRDP would neither conflict with nor obstruct implementation of the 2003 AQMP and this impact would be *less than significant*.

Threshold	Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Impact 4.3-2 **The 2005 LRDP construction activities would result in the generation of criteria pollutants, which could contribute substantially to an existing or projected air quality violation. Even with implementation of the relevant Programs and Practices and Mitigation Measure, this impact would be *significant and unavoidable*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus to accommodate enrollment of approximately 25,000 students.

During the LRDP planning horizon, the campus will continue to implement the following existing campus Programs and Practices relevant to air quality during construction.

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 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

(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

(This is identical to Geology PP 4.6-2(a) and Hydrology PP 4.8-3(c).)

PP 4.3-2(c) *The campus shall continue to implement SCAQMD Rule 1403—Asbestos when demolishing existing buildings on the campus.*

Under the 2005 LRDP, emissions would continue to 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 be in a different stage of construction and would affect different receptors. When construction is completed at one location, other buildings could be constructed or renovated.

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 daily emissions associated with each phase of the proposed construction activities. Nonetheless, Table 4.3-4 (Estimated Peak Daily Construction Emissions) identifies daily emissions that are estimated to occur on peak construction days, such as when two construction sites are being graded and/or excavated, and when residential and educational construction is occurring simultaneously. These calculations assume that appropriate dust control measures would be implemented during each phase of development as required by SCAQMD Rule 403—Fugitive Dust.

Table 4.3-4 Estimated Peak Daily Construction Emissions

Emissions Source	*Peak Day Emissions in Pounds per Day*				
	CO	*VOC*	*NO_x*	*SOx*	*PM_{10}*
Site Excavation and Grading Phase					
Construction Equipment	185.1	23.9	173.9	0.0	7.79
On-Road Vehicles	8.6	0.4	0.8	0.0	0.0
Site Excavation and Grading	—	—	—	—	44.6
Total Emissions	***193.7***	***24.4***	***174.7***	***0.0***	***52.4***
SCAQMD Thresholds	550.0	75.0	100.0	150.0	150.0
Significant Impacts?	No	No	Yes	No	No
Construction Phase					
Construction Equipment	162.0	21.7	164.3	0.0	7.4
On-Road Vehicles	29.9	2.5	1.4	0.0	0.4
Total Emissions	***191.9***	***24.2***	***165.7***	***0.0***	***7.8***
SCAQMD Thresholds	550.0	75.0	100.0	150.0	150.0
Significant Impact?	No	No	Yes	No	No

Source: EIP Associates, 2003. Calculation sheets are provided in Appendix C. Numbers may not appear to add correctly due to rounding in the URBEMIS 2002 computer model.

As shown, construction related daily emissions would exceed SCAQMD significance thresholds for NOx during the site excavation and grading phase and the peak construction phase. To reduce this potentially significant impact, the following mitigation measure shall be implemented:

MM 4.3-2 *Programs and Practices 4.3-2(a), (b), and (c), or their equivalent, shall be included in construction contract specifications. The contract specifications shall require the use of low NOx diesel fuel and construction equipment to the extent that it is readily available at the time of development.*

Implementation of PP 4.3-2(a) through PP 4.3-2(c) and MM 4.3-2 ensures that construction related air quality impacts are minimized. They would not, however, reduce the net increase in peak construction activities to below the thresholds of significance recommended by the SCAQMD. No additional feasible mitigation has been identified to reduce this impact.

Even with implementation of existing campus Programs and Practices and MM 4.3-2, implementation of the 2005 LRDP would result in construction emissions that exceed the applicable threshold for NOx, and this impact would be ***significant and unavoidable***.

Impact 4.3-3 **Implementation of the 2005 LRDP would generate a net increase in daily operational campus emissions, which could contribute substantially to an existing or projected air quality exceedance. Even with implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measure, this impact would be *significant and unavoidable*.**

Implementation of the 2005 LRDP would increase the amount of building space, ornamental landscaping, number of students living on-campus, and number of faculty, staff, and students commuting to the campus. There would be an associated increase in daily emissions associated with stationary sources for space and water heating, landscape maintenance activities, and use of consumer products. There would also be a change in motor vehicle trips and their associated emissions.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including *Conservation 5*, described above under Impact 4.3-1, to require continued adherence to the conservation requirements of Title 24 of the California Code of Regulations and compliance with any future conservation goals or programs enacted by the University of California.

In addition, the campus would continue to implement existing campus Programs and Practices relevant to air quality, described under Impact 4.3-1 above, including PP 4.3-1 (continue to implement a Transportation Demand Management program), PP 4.3-2(a) (construction contract provisions), PP 4.3-2(b) (dust control measures consistent with SCAQMD Rule 403), and PP 4.3-2(c) (implement SCAQMD Rule 1403 for asbestos).

Table 4.3-5 (Existing and Future With Project Daily Operational Campus Emissions) identifies the total estimated daily operational emissions associated with the campus under the existing baseline scenario and the future with project scenario during the regular session. The estimated net increase in daily operational campus emissions during the regular session is presented at the bottom of Table 4.3-5. As shown, there would be a net reduction in the amount of CO generated on a daily basis. However, the net increase in daily campus emissions associated with the 2005 LRDP would exceed the thresholds of significance recommended by the SCAQMD for VOC, NO_x, and PM_{10}. Therefore, implementation of the 2005 LRDP would generate a net increase in daily operational campus emissions that contributes substantially to an existing or projected air quality exceedance. This is a significant impact.

The 2005 LRDP specific planning objectives identified under Impact 4.3-1 would serve to encourage the use of transit, reduce the number of vehicle trips and miles traveled, and create further opportunities for campus students, faculty, and staff to walk and bike to campus, and, therefore, reduce the operational air quality impacts of the 2005 LRDP.

Table 4.3-5 Existing and Future With Project Daily Operational Campus Emissions

Emissions Source	Emissions in Pounds per Day				
	CO	VOC	NOx	SOx	PM_{10}
Existing Campus Uses and Operations					
Construction Activities	112.4	8.4	46.4	0.0	2.3
Water & Space Heating/Cooling	9.0	2.4	53.8	0.0	0.1
Landscape Maintenance	41.4	4.7	0.8	0.0	0.1
Consumer Products		66.3			
Motor Vehicles	5,019.8	381.0	508.8	2.8	407.5
Total Emissions	*5,182.6*	*462.8*	*609.8*	*2.8*	*410.0*
Future With Project Campus Uses and Operations					
Construction Activities [a]	193.7	24.4	174.7	0.0	52.4
Water & Space Heating/Cooling	51.8	5.8	131.1	0.0	0.2
Landscape Maintenance	75.9	8.7	1.4	0.0	0.1
Consumer Products		213.8			
Motor Vehicles	4,174.8	322.5	417.9	4.9	957.0
Total Emissions	*4,496.2*	*575.2*	*725.1*	*4.9*	*1,009.7*
Net Increase in Future Daily Operational Campus Emissions (Future With Project Minus Future Without Project)					
Net Increase in Future Daily Emissions	-686.4	112.4	115.3	2.1	599.7
SCAQMD Threshold	550.0	55.0	55.0	150.0	150.0
Significant Impacts?	No	Yes	Yes	No	Yes

Source: EIP Associates, 2002. Calculation data and results are provided in Appendix C and assume an existing baseline year of 2003 and a future baseline year of 2015.

[a] Construction activities would occur in the future with or without implementation of the 2005 LRDP. The daily emissions shown in this table for construction activities are for example only, but are expected to be similar under future without project or future with project scenarios.

The following mitigation measure shall be implemented:

MM 4.3-3 *To reduce energy consumption and areawide emission of criteria pollutants, the campus shall annually inspect and enforce an emissions reduction control strategy, which may include, where feasible, the following:*

Design

- *Use light-colored roof materials to reduce heat gain*
- *Orient buildings to the north and include passive solar design features*
- *Increase building and attic insulation beyond Title 24 requirements*
- *Provide electric vehicle charging systems at convenient location in campus parking facilities*
- *Provide prominent website and/or kiosks displaying information about alternative transportation programs*

- *Install electrical outlets outside buildings for the use of electric landscape maintenance equipment*

Operation

- *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 station(s)*
- *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*

Implementation of MM 4.3-3, as well as PP 4.3-1, PP 4.3-2(a) through PP 4.3-2(c), and MM 4.3-2, ensures that construction related air quality impacts are minimized and the number of motor vehicle trips and area source emissions are reduced to the maximum extent feasible. They would not, however, reduce the net increase in daily emissions to below the thresholds of significance recommended by the SCAQMD. As discussed previously in this section, the campus is currently implementing numerous programs to reduce air pollutants, energy demand (thereby reducing associated energy generation emissions), and motor vehicle trips. With the exception of MM 4.3-3, these existing programs represent the extent of all mitigation that can be implemented by the campus to reduce the significant increase in emissions known and feasible at this time. Feasibility will change over the life of the LRDP EIR.

The emissions reductions associated with continued implementation of the TDM program under the 2005 LRDP are presented in Table 4.3-6 (2005 LRDP TDM Emissions Reductions) based on traffic volumes determined for the future with project campus motor vehicles without TDM. As shown, the TDM program would reduce the motor vehicle emissions by 3.3 to 5.8 percent below those that would otherwise be generated if the TDM program were not implemented.

The SCAQMD *CEQA Air Quality Handbook* indicates that energy conservation measures reduce the emissions associated with water heating and space heating and cooling needs by 1.5 to 14 percent. The implementation of BACT for all new stationary sources of emissions reduces the emissions from these sources by the maximum extent feasible.

Table 4.3-6 2005 LRDP TDM Emissions Reductions

Emissions Source	*Emissions in Pounds per Day*				
	CO	*VOC*	*NOx*	*SOx*	*PM_{10}*
Future With Project Campus Motor Vehicles without TDM	4,752.4	595.0	750.7	5.2	1,068.3
Future With Project Campus Motor Vehicles with TDM	4,496.2	575.2	725.1	4.9	1,009.7
Net Reduction in Daily Emissions	256.2	19.8	25.6	0.3	58.6
Percent Reduction	5.4%	3.3%	3.4%	5.8%	5.5%

Source: EIP Associates, 2003. Calculation data and results are provided in Appendix C.

Even with implementation of LRDP Planning Strategies, existing campus Programs and Practices and MM 4.3-2, implementation of the 2005 LRDP would result in operational emissions that exceed the applicable thresholds for VOC, NOx, and PM_{10} and this impact would be ***significant and unavoidable***.

Threshold	Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?

Impact 4.3-4 **Even with implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, implementation of the 2005 LRDP would result in a cumulatively considerable net increase of criteria pollutants for which the project region is in nonattainment under an applicable federal or State ambient air quality standard. This is considered a *significant and unavoidable impact*.**

As identified in the thresholds of significance discussions, construction-related or operational emissions that exceed the thresholds of significance for an individual project would also cause a cumulatively considerable net increase in pollutants in the South Coast Air Basin. Table 4.3-4 indicates that construction related daily emissions would exceed SCAQMD significance thresholds for NOx during the site excavation and grading phase and the peak construction phase. Likewise, Table 4.3-5 indicates that the net increase in daily campus operational emissions associated with the 2005 LRDP would exceed the thresholds of significance recommended by the SCAQMD for VOC, NO_x, and PM_{10}. Therefore, implementation of the 2005 LRDP would generate a cumulatively considerable net increase in daily construction-related and operational campus emissions that contribute to an existing or projected air quality exceedance.

Implementation of PP 4.3-1, PP 4.3-2(a) through PP 4.3-2(c), MM 4.3-2, and MM 4.3-3, ensures that construction related air quality impacts are minimized and the number of motor vehicle trips and area source emissions are reduced to the maximum extent feasible. They would not, however, reduce the net increase in daily construction-related and operational emissions to below the thresholds of significance

recommended by the SCAQMD. As discussed previously in this section, the campus is currently implementing numerous programs to reduce air pollutants, energy demand (thereby reducing associated energy generation emissions), and motor vehicle trips. These existing programs represent the extent of all mitigation that can be implemented by the campus to reduce the significant increase in emissions known and feasible at this time. Feasibility will change over the life of the LRDP EIR.

Threshold	Would the project expose sensitive receptors to substantial pollutant concentrations?

Impact 4.3-5 **Implementation of the 2005 LRDP would not expose sensitive receptors to substantial pollutant concentrations. This is considered a *less-than-significant* impact.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus to accommodate enrollment of approximately 25,000 students.

As was done to assess existing CO concentrations, the simplified CALINE4 screening procedure was used to predict future CO concentrations at the study intersections in the vicinity of the campus in the year 2015 for the two possible configurations of Iowa Avenue, between University Avenue and Martin Luther King Boulevard. The first scenario assumes that this segment of Iowa Avenue remains a two-lane roadway and the second scenario assumes an alternative four-lane cross section. The results of air emissions modeling under the two-lane configuration of Iowa Avenue are shown in Table 4.3-7 (Future With Project Localized Carbon Monoxide Concentrations—Two-Lane Iowa Avenue Scenario) and the results of air emissions modeling under the four-lane configuration of Iowa Avenue are shown in Table 4.3-8 (Future With Project Localized Carbon Monoxide Concentrations—Four-Lane Iowa Avenue Scenario).

Table 4.3-7 Future With Project Localized Carbon Monoxide Concentrations—Two-Lane Iowa Avenue Scenario

	CO Concentrations in Parts per Million					
	25 feet		*50 Feet*		*100 Feet*	
Intersection	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*	*1-Hour*	*8-Hour*
3rd Street & Kansas Avenue	6.0	3.7	5.8	3.6	5.6	3.5
3rd Street & Chicago Avenue	7.6	4.7	7.1	4.4	6.5	4.1
3rd Street & SR-60 Southbound Ramp	6.3	4.6	6.0	4.4	5.7	4.3
Blaine Street & SR-60 Northbound Ramp	6.3	3.9	6.0	3.8	5.8	3.6
Blaine Street & Iowa Avenue	8.4	5.2	7.7	4.8	7.0	4.3
Blaine Street & Canyon Crest Drive	6.7	4.2	6.4	4.0	6.0	3.7
Blaine Street & Watkins Dr.	6.5	4.0	6.1	3.8	5.9	3.7
Linden Street & Chicago Avenue	6.3	3.9	6.1	3.8	5.8	3.6
Linden Street & Iowa Avenue	6.2	3.9	6.0	3.7	5.7	3.6
Linden Street & Canyon Crest Drive	6.1	3.8	5.9	3.7	5.7	3.5

Table 4.3-7 Future With Project Localized Carbon Monoxide Concentrations—Two-Lane Iowa Avenue Scenario

Intersection	CO Concentrations in Parts per Million					
	25 feet		50 Feet		100 Feet	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
University Avenue & Kansas Avenue	6.3	3.9	6.1	3.8	5.8	3.6
University Avenue & Chicago Avenue	9.0	5.5	8.2	5.0	7.3	4.5
University Avenue & Iowa Avenue	8.3	5.1	7.6	4.7	6.9	4.3
University Avenue & SR-60 Southbound Ramp	7.1	4.4	6.6	4.1	6.2	3.9
University Avenue & SR-60 Northbound Ramp	6.6	4.1	6.3	3.9	6.0	3.7
University Avenue & Campus Drive	10.0	4.9	9.8	4.8	9.5	4.6
Martin Luther King Blvd.& Chicago Avenue	12.9	6.6	12.0	6.1	11.2	5.6
Martin Luther King Blvd. & Iowa Avenue	6.5	4.1	6.2	3.9	5.9	3.7
Martin Luther King Blvd. & Canyon Crest Drive	12.8	6.6	11.9	6.1	11.1	5.6
Central Avenue & Chicago Avenue	7.3	4.5	6.8	4.2	6.3	3.9
Central Avenue & Canyon Crest Drive	8.2	5.0	7.5	4.6	6.8	4.2
Central Avenue & Box Springs Boulevard	7.0	4.3	6.6	4.1	6.2	3.8
Big Springs Road & Watkins Drive	6.7	4.2	6.3	3.9	6.0	3.7
Martin Luther King Blvd. & SR-60 Southbound Ramp	7.1	4.4	6.6	4.1	6.2	3.9
Martin Luther King Blvd. & SR-60 Northbound Ramp	5.9	3.7	5.7	3.6	5.5	3.5
Le Conte Drive & Chicago Avenue	6.8	4.2	6.5	4.0	6.0	3.8
El Cerrito Drive & Sycamore Canyon	5.4	3.4	5.3	3.3	5.3	3.3
Central Avenue & SR-60 Southbound Ramp	5.9	3.7	5.7	3.6	5.6	3.5
Central Avenue & SR-60 Northbound Ramp	6.8	4.2	6.4	4.0	6.0	3.8
Linden Street & Aberdeen Drive	6.4	4.0	6.1	3.8	5.8	3.6
Campus Dr. & Aberdeen Dr.	6.2	3.8	5.9	3.7	5.7	3.6
Big Springs Road & Campus Drive	6.0	3.8	5.8	3.6	5.6	3.5
Parking Lot 1 & Campus Drive	5.8	3.6	5.6	3.5	5.5	3.4
Campus Drive & Canyon Crest Drive	5.5	3.4	5.4	3.4	5.3	3.3
Campus Drive & Citrus Drive	5.4	3.4	5.3	3.3	5.3	3.3
Eucalyptus Drive & Campus Drive	5.9	3.7	5.7	3.6	5.5	3.4

Source: EIP Associates, 2003. Calculation sheets are provided in Appendix C.

Federal 1-hour standard is 35.0 parts per million. State 1-hour standard is 20.0 parts per million.

Federal 8-hour standard is 9.5 parts per million. State 8-hour standard is 9.1 parts per million.

Table 4.3-8 Future With Project Localized Carbon Monoxide Concentrations—Four-Lane Iowa Avenue Scenario

Intersection	CO Concentrations in Parts per Million					
	25 feet		50 Feet		100 Feet	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
3rd Street & Kansas Avenue	6.0	3.7	5.8	3.6	5.6	3.5
3rd Street & Chicago Avenue	6.7	4.2	6.4	4.0	6.0	3.7

Table 4.3-8 Future With Project Localized Carbon Monoxide Concentrations—Four-Lane Iowa Avenue Scenario

Intersection	CO Concentrations in Parts per Million					
	25 feet		50 Feet		100 Feet	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
3rd Street & SR-60 Southbound Ramp	6.3	4.6	6.0	4.4	5.7	4.3
Blaine Street & SR-60 Northbound Ramp	6.3	3.9	6.0	3.8	5.8	3.6
Blaine Street & Iowa Avenue	8.4	5.2	7.7	4.8	7.0	4.3
Blaine Street & Canyon Crest Drive	6.7	4.2	6.4	4.0	6.0	3.7
Blaine Street & Watkins Dr.	6.5	4.0	6.1	3.8	5.9	3.7
Linden Street & Chicago Avenue	6.2	3.8	5.9	3.7	5.7	3.6
Linden Street & Iowa Avenue	6.5	4.0	6.2	3.8	5.9	3.7
Linden Street & Canyon Crest Drive	6.1	3.8	5.9	3.7	5.7	3.5
University Avenue & Kansas Avenue	6.3	3.9	6.1	3.8	5.8	3.6
University Avenue & Chicago Avenue	7.2	4.5	6.8	4.2	6.3	3.9
University Avenue & Iowa Avenue	8.2	5.1	7.6	4.7	6.9	4.3
University Avenue & SR-60 Southbound Ramp	6.5	4.1	6.2	3.9	5.9	3.7
University Avenue & SR-60 Northbound Ramp	6.7	4.1	6.3	3.9	6.0	3.7
University Avenue & Campus Drive	10.0	4.9	9.8	4.8	9.5	4.6
Martin Luther King Blvd.& Chicago Avenue	12.7	6.5	11.9	6.0	11.1	5.6
Martin Luther King Blvd. & Iowa Avenue	7.6	4.7	7.1	4.4	6.5	4.0
Martin Luther King Blvd. & Canyon Crest Drive	12.9	6.6	12.0	6.1	11.2	5.6
Central Avenue & Chicago Avenue	7.3	4.5	6.8	4.2	6.3	3.9
Central Avenue & Canyon Crest Drive	8.2	5.0	7.5	4.6	6.8	4.2
Central Avenue & Box Springs Boulevard	7.0	4.3	6.6	4.1	6.2	3.8
Big Springs Road & Watkins Drive	6.7	4.2	6.3	3.9	6.0	3.7
Martin Luther King Blvd. & SR-60 Southbound Ramp	6.5	4.0	6.1	3.8	5.8	3.6
Martin Luther King Blvd. & SR-60 Northbound Ramp	5.9	3.7	5.7	3.5	5.5	3.4
Le Conte Drive & Chicago Avenue	6.8	4.2	6.5	4.0	6.1	3.8
El Cerrito Drive & Sycamore Canyon	5.4	3.4	5.3	3.3	5.3	3.3
Central Avenue & SR-60 Southbound Ramp	5.9	3.7	5.7	3.6	5.6	3.5
Central Avenue & SR-60 Northbound Ramp	6.8	4.2	6.4	4.0	6.0	3.8
Linden Street & Aberdeen Drive	6.4	4.0	6.1	3.8	5.8	3.6
Campus Dr. & Aberdeen Dr.	6.2	3.8	5.9	3.7	5.7	3.6
Big Springs Road & Campus Drive	6.0	3.8	5.8	3.6	5.6	3.5
Parking Lot 1 & Campus Drive	5.8	3.6	5.6	3.5	5.5	3.4
Campus Drive & Canyon Crest Drive	5.5	3.4	5.4	3.4	5.3	3.3
Campus Drive & Citrus Drive	5.4	3.4	5.3	3.3	5.3	3.3
Eucalyptus Drive & Campus Drive	5.9	3.7	5.7	3.6	5.5	3.4

Source: EIP Associates, 2003. Calculation sheets are provided in Appendix C.

Federal 1-hour standard is 35.0 parts per million. State 1-hour standard is 20.0 parts per million.

Federal 8-hour standard is 9.5 parts per million. State 8-hour standard is 9.1 parts per million.

As shown in Table 4.3-7 and Table 4.3-8, future CO concentrations near the identified intersections under the two possible configurations for Iowa Avenue, between University Avenue and Martin Luther King Boulevard, would not exceed the national 35.0 ppm and State 20.0 ppm 1-hour ambient air quality standards or the national 9.5 ppm and State 9.1 ppm 8-hour ambient air quality standards when the 2005 LRDP is fully implemented.

Thus, implementation of the 2005 LRDP would not expose sensitive receptors to substantial pollutant concentrations, and this impact would be *less than significant*.

Impact 4.3-6 **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. This is considered a *less-than-significant* impact.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, including approximately 3.90 million gsf of instruction and research facilities for academic programs and professional schools, which may include teaching and research laboratories, greenhouses, and other research facilities that may use hazardous materials in teaching and research activities, and could result in the emission of toxic air emissions.

The worst-case theoretical incremental cancer risk as a result of a lifetime exposure to emissions from the routine campuswide operation of all sources under the 2005 LRDP was estimated in the Health Risk Assessment (HRA) to be 7.43 in one million (7.43×10^{-6}) for receptors off-campus and 1.48 in one million for receptors on-campus (1.48×10^{-6}). The off-campus cancer risk reflects lifetime exposure of an individual, and the on-campus cancer risk reflects exposure over a 5-year period on the campus. The difference in the magnitude of the risk on-campus as compared to off-campus reflects this variation. Potential risks at all other locations within the campus and surrounding vicinity would be lower. Because these risks do not exceed the CAPCOA and SCAQMD thresholds of 10 in one million, implementation of the 2005 LRDP would not generate toxic air emissions that result in excess human cancer risk from stationary sources, and the potential impacts would be less than significant. No mitigation is required. Refer to Appendix D for additional detail.

Results of the chronic and acute noncancer health effects assessment indicate that all of the hazard index (HI) values for each organ system would be less than 1.0. The maximum chronic HI for an organ system would be 0.008 on campus and 0.007 off campus under the 2005 LRDP. The maximum acute HI for an organ system would be 0.09 on campus and 0.18 off campus under the 2005 LRDP. Potential health effects at all other locations within the campus and surrounding vicinity would be lower. Because these health effects are substantially less than an HI of 1.0, implementation of the 2005 LRDP would not generate toxic air emissions that result in a cumulative acute or chronic noncarcinogenic HI of 1.0 or greater and the impact would be less than significant.

Implementation of the 2005 LRDP would not result in the emission of toxic air contaminants at levels that would expose sensitive receptors to substantial pollutant concentrations, and this impact would be *less than significant*.

Threshold	Would the project create objectionable odors affecting a substantial number of people?

Impact 4.3-7 **Implementation of the 2005 LRDP would not create objectionable odors affecting a substantial number of people. This is considered a *less-than-significant* impact.**

Construction activities occurring under the 2005 LRDP would generate airborne odors associated with the operation of construction vehicles (i.e., diesel exhaust) and the application of architectural coatings. These emissions would occur during daytime hours only and would be isolated to the immediate vicinity of the construction site and activity. As such, they would not affect a substantial number of people.

Potential operational airborne odors could result from cooking activities associated with the new residential buildings. These odors would be similar to existing housing and food services uses on the campus and would be confined to the immediate vicinity of the new buildings. The other potential source of odors would be new trash receptacles within the campus. The receptacles would have lids and be emptied on a regular basis, before potentially substantial odors have a chance to develop.

Implementation of the 2005 LRDP would not create objectionable odors affecting a substantial number of people, and this impact would be *less than significant*. No mitigation is required.

4.3.5 Cumulative Impacts

The geographic context for air quality impacts is Source Receptor Area (SRA) 23 of the Basin. This area covers metropolitan Riverside County. The analysis accounts for all anticipated cumulative growth within this geographic area. However, determination of the significance of cumulative air quality impacts is typically according to the project methodology employed by the SCAQMD, as the regional body with authority in this area, and which has taken regional growth projections into consideration.

With regard to impacts relating to the exposure of sensitive receptors to substantial toxic pollutant concentrations, the geographic context for this analysis will be the immediate vicinity of the campus. For the purposes of impacts relating to objectionable odors, the geographic context is considered to be the immediate vicinity of the campus, due to the limited localized nature of odor impacts.

Related projects are not expected to result in a significant impact in terms of conflicting with, or obstructing implementation of, the AQMP and Amendment for Ozone. The AQMP was prepared to accommodate growth, to reduce the high levels of pollutants within the areas under the jurisdiction of SCAQMD, to return clean air to the region, and to minimize the impact on the economy. Growth considered to be consistent with the AQMP would not interfere with attainment because this growth is included in the projections utilized in the formulation of the AQMP. Consequently, as long as growth in the Basin is within the projections for growth identified in the Growth Management Chapter of the RCPG, implementation of the AQMP will not be obstructed by such growth. As growth in the Basin has not exceeded these projections, this impact would not be cumulatively considerable. Additionally, since growth under the 2005 LRDP is consistent with growth under the RCPG, and because of the

implementation of campus TDM measures, the impact of the 2005 LRDP would not have a cumulatively considerable contribution to this impact.

Because the Basin is currently in nonattainment for ozone, CO, and PM_{10}, related projects could exceed an air quality standard or contribute to an existing or projected air quality exceedance. Therefore, this is a cumulatively considerable impact. With regard to determining the significance of the 2005 LRDP contribution, the SCAQMD neither recommends quantified analyses of cumulative construction or operational emissions nor provides methodologies or thresholds of significance to be used to assess cumulative construction or operational impacts. Instead, the SCAQMD recommends that a project's potential contribution to cumulative impacts should be assessed utilizing the same significance criteria as those for project specific impacts. Therefore, this EIR assumes that individual development projects that generate construction or operational emissions that exceed the SCAQMD recommended daily thresholds for project-specific impacts would also cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment.

As discussed previously under Impact 4.3-2, construction activities occurring within the campus could cause a net increase in daily construction related emissions of VOC and NOx that exceed the thresholds of significance recommended by the SCAQMD during peak construction scenarios. While the Basin is currently in attainment for NO_2 levels (NO_2 is a pure form of NOx), because VOC and NOx are precursors of ozone, for which the Basin is in nonattainment, construction under the 2005 LRDP would make a cumulatively considerable contribution to this impact. This cumulatively considerable impact is projected to occur as result of the peak construction scenarios outlined above; however, individual construction projects within the campus that do not exceed the SCAQMD recommended daily thresholds for project-specific impacts would not be considered to cause a cumulatively considerable increase in emissions.

With regard to daily operational emissions and the cumulative net increase of any criteria pollutant for which the region is in nonattainment, there is a cumulatively considerable impact, due to nonattainment of ozone, CO, and PM_{10} standards in the Basin. With regard to the contribution of the 2005 LRDP, the discussion under Impact 4.3-3 concludes that the net increase in daily campus operational emissions associated with the 2005 LRDP would exceed the thresholds of significance recommended by the SCAQMD for VOC, NO_x, and PM_{10}. Therefore, implementation of the 2005 LRDP would generate a cumulatively considerable net increase in daily construction-related and operational campus emissions that contribute to an existing or projected air quality exceedance.

Related projects are not expected to expose sensitive receptors to substantial pollutant concentrations. Impact 4.3-5 analyzed future exposure of sensitive receptors to substantial pollutant concentrations due to future growth in the project vicinity. Table 4.3-7 shows that projected future localized CO levels, including future off-campus projects, would not exceed national or State standards. Consequently, no cumulatively considerable impact will occur. As Impact 4.3-5 took into account emissions from the 2005 LRDP as well as those of off-campus projects, the 2005 LRDP contribution to this impact would not be cumulatively considerable. It is also unlikely that projects in addition to those listed as related projects

will result in future exposure of sensitive receptors to substantial pollutant concentrations, because CO levels are projected to be lower in the future due to improvements in vehicle emission rates predicted by the ARB.

With regard to operations of future development resulting in the exposure of sensitive receptors to substantial toxic pollutant concentrations, it is not expected that there will be a cumulatively considerable impact. Related projects expected in the immediate vicinity of the campus are expected to mainly consist of residential, office, and commercial uses, which do not result in toxic emissions at levels that can be considered substantial. In addition, regulations and laws relating to toxic air pollutants will also protect sensitive receptors from substantial concentrations. Consequently, it is expected that future operations would not result in cumulatively considerable impacts. The 2005 LRDP would not result in a cumulatively considerable contribution because analysis of 2005 LRDP operational impacts showed that the campus would result in an extremely small theoretical increment in cancer risk due to operational emissions that do not exceed the CAPCOA and SCAQMD standard of 10 in one million to the maximally exposed individual, and also because acute and chronic noncancer health risks from operation of the 2005 LRDP would have a hazard index of less than 1.0.

Related projects would not have a cumulatively considerable impact in terms of the creation of objectionable odors affecting a substantial number of people. For this threshold, the relevant geographic area would be the immediate vicinity of the campus. Projects projected to be built in the immediate vicinity of the campus include residential, office, and commercial developments, and could include restaurants. Odors resulting from the construction of these projects are not likely to affect a substantial number of people, due to the fact that construction activities do not usually emit offensive odors. Other odor impacts resulting from these projects are also not expected to affect a substantial amount of people, as garbage from these projects would be stored in areas and in containers as required by City and Health Department regulations, and restaurants are typically required to have ventilation systems that avoid substantial adverse odor impacts. Odor impacts would not be cumulatively considerable. As analyzed in Impact 4.3-7, above, UCR's contribution to odor impacts would not be cumulatively considerable.

4.3.6 References

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4.4 BIOLOGICAL RESOURCES

4.4.1 Introduction

This section discusses biological resources on the UCR campus and evaluates the potential for implementation of the 2005 LRDP to have a substantial adverse effect on any candidate, sensitive, or special status species; on any riparian habitat or other sensitive natural community; or on federally protected wetlands. In addition, this section evaluates the potential for implementation of the 2005 LRDP to interfere substantially with the movement of any native resident or migratory fish or wildlife species or to conflict with any local applicable policies protecting biological resources. The term "biological resources" designates both botanical and wildlife communities and species on the UCR campus.

The information in this section is based upon a Biological Resources Technical Report (BRTR), prepared by Natural Resources Assessment, Inc. (NRA, Inc.), which is included as Appendix B. Personnel from EIP Associates confirmed information and conducted selected field checks in a site visit in December 2002. The California Natural Diversity Database (CNDDB) provided information on sensitive species that potentially occur in the project area. Juan Hernandez, Environmental Specialist III with the California Department of Fish and Game, provided additional information during a scoping meeting with EIP Associates. Dr. Len Nunney, Professor of Biology at UCR, provided additional information on area wildlife corridors and biological resources on campus. The UCR Botanic Gardens website provided information on animal species that have been observed on campus. Bibliographic entries for reference materials appear in Section 4.4.6 (References) of this section.

Eight comment letters related to biological resources were received on the Notice of Preparation circulated for the project. One comment letter requested that the EIR include a complete assessment of flora and fauna on campus with a particular emphasis on endangered, threatened, and sensitive species, and sensitive habitats. The letter further requested a thorough discussion of impacts to biological resources and mitigation measures to offset impacts, in addition to a range of alternatives. Finally, the letter stated opposition to the channelization or elimination of any watercourses; instead, it suggested that all watercourses should be maintained with an adequate riparian buffer zone to maintain current values. Another comment letter requested that the EIR discuss connectivity from Box Springs Canyon Park to the campus and the presence of invasive species. A third comment letter requested a consistency analysis for the project with respect to key SCAG policies relating to conservation of biological resources. LRDP consistency with SCAG policies is addressed in the Section 4.9 (Land Use), rather than this section of the document.

Additional written comments in response to the NOP and at the public scoping meeting included suggestions that the EIR address: (1) regional impacts to biological resources; (2) impacts to coastal sage scrub; (3) impacts from loss of green and open space; (4) LRDP consistency with the Western Riverside County Multi-Species Habitat Conservation Plan; (5) the status of the riparian area between Canyon Creek and the freeway; (6) impacts on wildlife movement corridors, including from the Botanic Gardens

and Box Springs Mountain Park to Sycamore Canyon Park (across the I-215/SR-60 freeway); and (7) impacts to biological resources off campus. In addition, support was expressed for the concept from the 1990 LRDP plan to preserve the main drainage through campus (the University Arroyo) as an open space/recreational corridor. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.4.2 Existing Conditions

Existing biological resources on the UCR campus are located in those areas of the campus that are undeveloped or that have been developed as landscaped open space (refer to Figure 4.4-1). Based on the land use and open space designations[10] defined in the 2005 LRDP, on-campus plant and wildlife resources can be generally described by four biological resource "types" as follows:

- *Natural* areas are undeveloped open space and are comprised of native and naturally occurring plant species. This association refers to the southeast hills on the East Campus, where the primary plant community is coastal sage scrub.
- *Naturalistic* areas are mostly undeveloped, but have been subject to modification and/or the introduction of ornamental trees and shrubs. This association is limited to drainage channels or arroyos, Picnic Hill and the Botanic Garden.
- *Landscaped* areas are open spaces that have been developed with turf-covered lawn areas, mature trees, and shrubs or groundcover in planting beds, typically around the edges of these spaces. This association dominates the academic core and the residential areas of the East Campus.
- *Agricultural* areas are undeveloped land that is used for agricultural teaching and research and is dominated by row crops and orchards. This association is found on most of the West Campus.

Plant Communities

Each biological resource type, including associated plant communities, is described below.

Natural

The *Natural* biological resource type is located in undeveloped open space where naturally occurring plant communities are found. This type is limited to the southeastern hills on the East Campus, where the primary plant community found is coastal sage scrub, as described below.

Coastal Sage Scrub

On the UCR campus, coastal sage scrub is confined almost entirely to the hillsides and drainages of the southeast hills, extending into the Botanic Gardens and the adjacent hillsides. A small stand also exists in the West Campus, along the northern bank of the Box Springs Arroyo, south of Martin Luther King Boulevard.

[10] The 2005 LRDP defines five types of open space: Natural, Naturalistic, Campus Landmark Open Spaces, Malls and Linear Open Spaces and Neighborhood Parks. Of these, *Natural* and *Naturalistic* are adapted for use in this section. The other LRDP open space designations correspond to the "Landscaped" biological resource association described in this section.

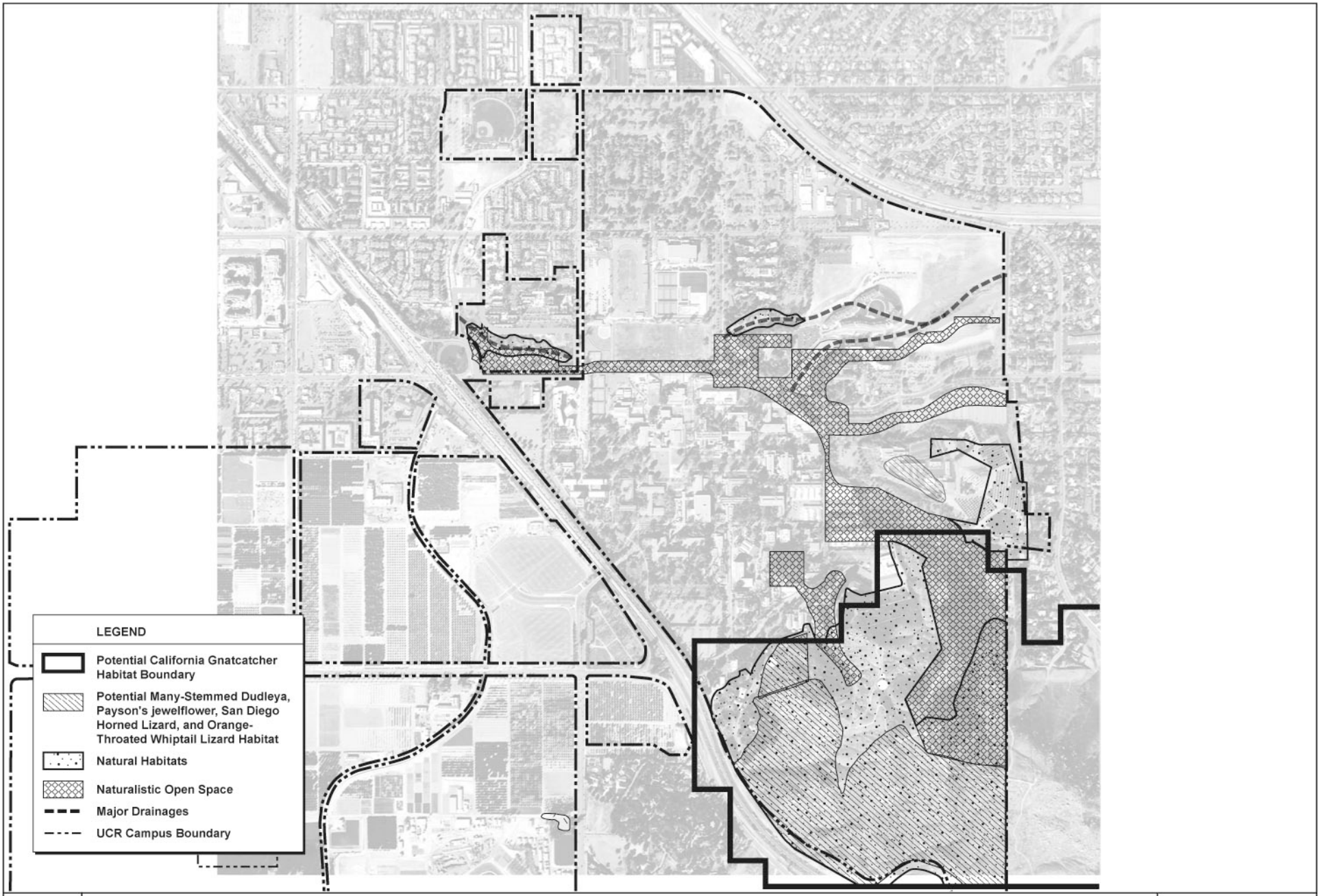

FIGURE **4.4-1**

Existing Campus Biological Resources

***Source*:** UC Riverside LRDP, 2005; EIP Associates, 2004

UC Riverside

Not to Scale

EIP ASSOCIATES

10537-00

In the Riverside area, the coastal sage scrub type is known as Riversidean coastal sage scrub, typified by several dominant species including desert brittlebush (*Encelia farinosa*), California sagebrush (*Artemisia californica*), flat-topped buckwheat (*Eriogonum fasciculatum*), and black sage (*Salvia mellifera*). The Riversidean coastal sage scrub can be further subdivided depending upon the slope aspect. On south facing slopes, the dominant scrub species is desert brittlebush. On north facing slopes, the dominant species include California sagebrush, flat-topped buckwheat, and black sage. Herbaceous dicots in this plant community include corethrogyne (*Corethrogyne filaginifolia*) and everlasting (*Gnaphalium* spp.).

Depending upon the slope aspect, soils, and degree of shrub cover, the understory may include annual grasses and native wildflowers. In more moist soils, wildflower species may include tidy-tips (*Layia platyglossa*), cream cups (*Platystemon californicus*), and California poppy (*Eschscholzia californica*). In more open areas, plantain (*Plantago ovata*), Mariposa lily (*Calochortus splendens*), and blue dicks (*Dichelostema pulchellum*) are common. In areas around granitic rock outcrops, common species include the California snapdragon (*Scrophularia californica*) and bricklebush (*Brickellia californica*).

Naturalistic

Naturalistic areas on the campus include those undeveloped areas that historically functioned as drainage channels, or that appear natural but are dominated by introduced plants and trees, including Picnic Hill and the Botanic Gardens. These areas have been subject to some modification, including channelization of storm flows, introduction of landscaping, grading, or minor development, including paved paths or picnic tables. Although these areas generally appear natural, they are termed *Naturalistic* in this EIR due to the extent of modification and the presence of nonnative and ornamental trees and shrubs. On the UCR campus, the riparian, annual grasslands, and ruderal plant communities are representative of this biological resource type, and these communities are described below. (Note: annual grasslands also occur in the southeast hills, described as the *Natural* biological resource type above.)

Included in this resource type is Picnic Hill, dominated by eucalyptus trees with various unmanicured shrubs and nonnative grasses, which is subject to minimal maintenance, such as tree limb removal and occasional leaf cleanup. This resource type is also located in the drainages and hills adjacent to the Botanical Gardens, the undeveloped area east of the Pentland Hills Residence Halls, and at other limited locations around the campus, typically at the edge of parking lots, adjacent to hillsides or at the edge of agricultural fields. In addition, the UCR Botanic Gardens occupies about 40 acres of hilly terrain at the base of the southeast hills near the eastern boundary of the campus. Although this area includes more than 3,500 introduced plant species used for teaching, research, and passive recreation, the Garden also provides a range of plant and wildlife habitats and includes undeveloped areas with annual grasslands and coastal sage scrub.

Riparian

On the UCR campus, the riparian plant community is found in current and former drainage courses or arroyos. Most of the East Campus drains to the University Arroyo, which runs along Big Springs Road, North Campus Drive, and University Avenue. The Box Springs Arroyo runs south of, and generally

parallels, Martin Luther King Boulevard and drains that portion of the West Campus south of Martin Luther King Boulevard (refer to Figure 4.8-1 in Section 4.8 Hydrology for a map of the campus arroyos).

Common plant species in the riparian plant community on the UCR campus include sycamore (*Platanus racemosa),* arroyo willow (*Salix lasiolepis),* Fremont's cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), and California walnut (*Juglans californica*). The mix of plant species found on campus varies depending upon the availability of water, soils, and extent of disturbance. Some of the arroyos are mostly dry watercourses with upland soils and a high degree of disturbance. Other drainages have moist soils, surface water at times, and have remained generally undisturbed by campus development. However, the unmodified portions are very limited, as most of the arroyos on campus have had flows diverted (or augmented by irrigation runoff) or have been modified, partially filled, or have been landscaped along the edges, in conjunction with adjacent development. Nevertheless, because of the potential for seasonal inundation due to rainfall, and irrigation runoff from adjacent areas to result in surface water, some or all portions of the on-campus arroyos may be considered wetlands and subject to the jurisdiction of the State of California Department of Fish and Game and the U. S. Army Corps of Engineers.

Over time, portions of the University Arroyo have been channelized or flows have been diverted to underground culverts. The portion along Big Springs Road is an engineered channel between Parking Lot 13 and the road. Along North Campus Drive, the arroyo includes two shallow detention basins, designed to retain stormwater during large events. In the eastern basin (east of the access road to the Veitch Student Center and Parking Lot 15), California walnut (*Juglans californica*) is the dominant native, with California pepper tree (*Schinus molle*), bottlebrush (species unknown), and other landscape shrubs forming the canopy with predominately nonnative lawn grasses as the understory. (This basin includes a short northward extension that may have been a former arroyo that was filled during construction of the Aberdeen-Inverness Residence Halls.) The westernmost basin, south of the Aberdeen-Inverness Residence Halls, known as The Glade, is landscaped with lawn and surrounded by cultivated shrubs and trees. Between Aberdeen Drive and Canyon Crest Drive, surface flow has been diverted underground and no trace of the arroyo remains. The Gage Basin (the western end of the University Arroyo) supports the highest quality riparian habitat on campus, with a dense stand of arroyo willow, Fremont's cottonwood, sycamore, sedge (*Carex* sp.), and mulefat.

A northern tributary to the University Arroyo remains relatively intact, running between Pentland Hills Residence Halls and Lothian Residence Hall to the campus boundary just west of Valencia Hill Drive. This eastern portion of this arroyo supports a degraded stand of Fremont's cottonwood and mulefat, along with cocklebur (*Xanthium strumarium*) and tree tobacco (*Nicotiana glauca*). Between Pentland and Lothian, the channel has been modified, with some sycamores and California walnut trees and nonnative grasses along the remnant drainage course.

Southern tributaries to the University Arroyo include a short arroyo at the eastern edge of the campus that terminates at the southern edge of Parking Lot 13. Plant species in this drainage include mulefat and California pepper tree at the bottom of the drainage, and some coastal sage scrub species on the banks. The Botanic Gardens arroyo runs through the Botanic Gardens (and is lined by introduced species) and

then extends from the gardens entrance to Parking Lot V10 east of East Campus Drive. Mulefat and California walnut are the dominant species in this drainage. An eastern tributary to the Botanic Gardens arroyo, located between the northern boundary of the Botanic Gardens and an unpaved access road south of the Salinity Lab, appears to fed by runoff from the orchards upslope and supports arroyo willow, Fremont cottonwood, mulefat and Mexican elderberry (*Sambucus mexicana*), and nonnative species such as California pepper tree, common fig (*Ficus palmata*) and others. Without the agricultural runoff, this small channel would probably only support coastal sage scrub species. A western tributary to the Botanic Gardens begins in the southeastern hills between the Botanic Gardens and the greenhouses south of South Campus Drive. This short arroyo contains some mulefat in its lower portions, while the upper portion is dry and supports primarily coastal sage scrub species.

On the West Campus, the Box Springs Arroyo is the primary east/west drainage crossing through the teaching and research fields south of Martin Luther King Boulevard. The Arroyo has been substantially altered by past practices, including channelization, disking, and grading. The eastern half of the Arroyo is essentially a flat, broad, and dry wash. Further downstream it becomes a grassy swale. The western half is typically a dry wash bordered by eucalyptus stands. A portion of the Box Springs Arroyo is fronted by old fishponds and small reservoirs (evidently set up for malarial experiments) that detain water and support various aquatic weeds and plants.

The Gage Canal (an artificial gravity fed irrigation channel) interrupts the Box Springs Arroyo. The Gage Canal is a concrete lined canal that is kept free of any plant growth and therefore does not provide any wetland habitat value.

Annual Grassland

The annual grassland plant community occurs primarily on heavy soils and generally flat topography and is found on the UCR campus primarily on lower slopes of the East Campus southeastern hills. A small stand also occurs on the West Campus, along the southern bank at the eastern end of the Box Springs Arroyo. Annual grassland forms a mixed plant community with coastal sage scrub. It also forms the understory plant community in areas where frequent fires have burned the scrub cover and slowed the recovery of native scrub species.

The annual grassland community is an invasive plant community, typically replacing the native grasslands formerly found in California. As an invasive plant community, it is tolerant of disturbance, and is generally found in areas that are similar to ruderal habitats (described below) that are subjected to fewer disturbances. Dominant species in this plant community include slender wild oats (*Avena barbata*), red brome (*Bromus madritensis*), ripgut grass (*Bromus diandrus*), and occasionally cheatgrass (*Bromus mollis*). Wildflowers in this plant community include fiddleneck (*Amsinckia intermedia*), golden stars (*Bloomeria crocea*), baby-blue eyes (*Nemophila menziesii*), and croton (*Croton californica*).

Ruderal

The ruderal plant community, also known as a weedy plant community, is found along the edges of developed and disturbed undeveloped areas, including the undeveloped area east of the Pentland Hills

Residence Halls and around some parking lots and outlying buildings on the East Campus. Small pockets are also found at the edges of dirt roads and cultivated plots in the agricultural teaching and research fields on the West Campus.

This plant community is generally found in flat open areas subject to periodic or constant disturbances such as weed control, heavy vehicle use, disking, and similar disruptive activities. Ruderal plant communities are dominated by weedy natural and introduced weed species highly adapted to disturbance, including Mediterranean grass (*Schismus barbatus*), short-podded mustard (*Hirschfeldia incana*), red brome, horehound (*Marrubium vulgare*) and in areas with denser soils, fiddleneck (*Amsinckia menziesii*). Wildflowers are limited in this habitat, mostly confined to sow thistle (*Sonchus oleraceus*), red-stemmed filaree (*Erodium cicutarium*), and other weedy wildflower species.

Landscaped

In general, landscaped areas on campus lack native species, are dominated by nonnative lawn grasses, shrubs and ornamental trees, and do not contain identifiable plant communities. Lawns dominate the East Campus, with trees and shrubs clustered along buildings, parking medians and the edges of walkways and roadways. Because of the age of landscape development, large portions of the central campus have numerous mature trees that screen views of the adjacent buildings, creating a park-like setting in many locations. The major landscaped open spaces on the East Campus include the Carillon Mall, various malls and linear open spaces in the academic core, the areas around the Residence Halls and associated parking lots, and the Canyon Crest Family Student Housing complex, which is dominated by lawns and numerous mature trees. The landscaped areas on the West Campus are limited to the area around Highlander Hall, Human Resources, UNEX, and more recent development, including the International Village and Parking Lot 30.

Agricultural

The majority of the West Campus is occupied by agricultural teaching and research fields, which are mostly occupied by row crops and orchards, primarily citrus varieties and lack identifiable plant communities. The fields north of Martin Luther King Boulevard undergo periodic disturbance as a result of weed control, citrus harvesting, and other activities associated with teaching and research. The fields south of Martin Luther King Boulevard include a variety of seasonal experimental plots and undergo different and irregular types of disturbance. Some sections of these fields have permanent groves and crops that undergo regular maintenance, while others are replanted from year to year with different crops. As a result, the agricultural teaching and research fields are disturbed in different ways both within and between years. Small areas of agricultural lands (primarily orchards) are also found on the East Campus. As noted above, the edge of some agricultural fields support ruderal plant communities, and portions of the Box Springs Arroyo support pockets of both ruderal and coastal sage scrub plants.

Wildlife Communities

The biological resource associations described above generally correspond to the wildlife communities on campus. In general, the *Natural* and *Naturalistic* areas are suitable for most native wildlife species as well

as those tolerant of some human activity, while the *Landscaped* and *Agricultural* areas are suitable for use only by species most tolerant of human activity.

Natural

The southern portion of the East Campus, including the southeast hills and the arroyos and hills near the Botanic Gardens, provide the largest area of native habitats on the UCR campus. The relatively large stand of undisturbed coastal sage scrub mixed with annual grasslands in this area may provide habitat for native wildlife, including sensitive species such as the orange-throated whiptail (*Cnemidophorus hyperythrus*), burrowing owl (*Athene cunicularia*), California gnatcatcher (*Polioptila californica californica*), and Stephens' kangaroo rat (*Dipodomys stephensi*). Other sensitive species that may occur in this area are described below and are listed in Table 4.4-1 (in Section 4.4.4 below).

Faculty and students have been using the hills on the southeastern portion of campus for research and education for over 20 years. At some point in their education, all of UCR's biology majors use this area as part of a required course, and the faculty has set up four permanent study areas with transects to teach sampling methods and basic ecological principles. Faculty members engage in research projects in these areas, studying topics such as distribution and abundance of coastal sage scrub mammal and bird populations.

Naturalistic

The arroyos on the East Campus provide riparian habitat of varying quality. The Gage Basin (north of University Avenue) drainage provides the highest quality riparian foraging and nesting habitat on campus for species groups such as warblers, sparrows, hawks, owls, and jays, as well as smaller mammals such as the opossum (*Didelphis virginiana*). The Botanic Gardens, Picnic Hill, and other arroyos provide plant cover and forage for common reptile and mammal species, foraging and nesting habitat for native and nonnative bird species, and perching sites for migratory bird species.

Over the past 40 years, the UCR Botanic Gardens has been noting wildlife species observed at the Botanic Gardens and elsewhere on campus, and bird species have been tracked with particular diligence. The running list of bird species is up to 195, including several sensitive species such as Cooper's hawk (*Accipiter cooperii*), tricolored blackbird (*Ageliaus tricolor*), burrowing owl, white-tailed kite (*Elanus leucurus*), and the coastal California gnatcatcher. This bird list, which was first developed in 1974, was last updated in 2000. Mammals found within the Botanic Gardens boundaries include the Audubon cottontail (*Syllvilagus audubonii*), Beechey or California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), opossum, striped skunk (*Mephitis mephitis*), spotted skunk (*Spilogale putorius*), and several species of rats and other rodents. Occasionally, bobcats (*Lynx rufus*) have been sighted. A number of reptiles have been observed at the Gardens, included western fence lizard (*Sceloporus occidentalis)*, alligator lizard (*Elgaria multicarinata)*, granite spiny lizard (*Sceloporus orcutti*), California legless lizard (*Anniella pulchra*), side-blotched lizard (*Uta stansburiana*), western skink (*Eumeces skiltonianus*), orange-throated whiptail *(Cnemidophorus hyperythrus)*, and western whiptail (*Cnemidophorus tigris*). Other observed reptiles include a

number of snakes, including the California king snake (*Lampropeltis gentulus californiae*), gopher snake (*Pituophis melanoleuces*), night snake (*Hypsiglena torguata*), red diamond rattlesnake (*Crotalus ruber*), red racer (*Masticophis flagellum*), ringneck snake (*Diadophis punctatus*), rosy boa (*Lichanura trivirgata*), and western blind snake (*Leptotyphlops humilis*). Amphibian species include the slender salamander (*Batrachoseps attenuatus*), Pacific tree frog (*Hyla regilla, also Pseudacris regilla*), bullfrog (*Rana catesbeiana*), and the western toad (*Bufo boreas*).

Given the proximity of *Naturalistic* areas to landscaped and agricultural areas, wildlife found in these areas may include some of the species listed above observed in the Botanic Gardens that are tolerant of human activity. Tree and scrub habitats would typically be used by common bird species including the northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), scrub jay (*Aphelocoma californica*), and Anna's hummingbird (*Calypte anna*). Amphibian species may include the slender salamander, Pacific tree frog, bullfrog, and the western toad. Reptile species would include the side-blotched lizard and alligator lizard. Mammal species could include the nonnative Norway rat (*Rattus norvegicus*) and house mouse (*Mus musculus*), as well as the native Botta's pocket gopher and Beechey (or California) ground squirrel.

The ruderal plant community located in the undeveloped area east of the Pentland Hills Residence Halls provides foraging habitat for mourning dove (*Zenaida macoura*), house finch (*Carpodacus mexicanus*), and some raptor species, such as red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*). Reptile species may include the side-blotched lizard and alligator lizard, and other species of reptiles seen in the Botanic Gardens, as described above, including several species of snakes. Mammal species could include the nonnative Norway rat and house mouse as well as the native Botta's pocket gopher and Beechey (or California) ground squirrel.

Landscaped and Agricultural

In general, the academic core, the area around the student residences, and most of the West Campus provide mostly artificially created habitats that are of little use to most native wildlife species. In addition to limited food and water sources, these areas are strongly impacted by human and vehicle activity. Common bird species in these areas include the northern mockingbird, house finch, house sparrow, scrub jay, and Anna's hummingbird. The numerous mature trees in these areas may also provide perching sites for migratory bird species. Amphibian species in these areas are probably absent, and reptile species would likely be limited to the side-blotched and alligator lizards. Mammals would include the Norway rat, house mouse, Botta's pocket gopher, Beechey (or California) ground squirrel. It is possible that those species listed above as having been observed in the Botanic Gardens may occasionally make use of Landscaped and Agricultural areas on campus; however, the pervasive human activity and disturbances such as landscape maintenance and construction may limit anything more than sporadic use for most of the native species listed above.

The portion of the Box Springs Arroyo fronted by old fishponds and reservoirs provides hunting and forage opportunities for birds. Observed species include the great egret (*Casmerodius albus*), mallards (*Anas platyrhynchos*), and horned grebes (*Podiceps auritus*).

Sensitive Biological Resources

A sensitive biological resource is a plant or animal that has been recognized by either federal, State, private resource management agencies, or conservation organizations as having special management needs due to limited distribution, limited numbers, or significant population declines associated with natural or manmade causes. Special status species include those designated as endangered, threatened, rare, protected, sensitive, or species of special concern according to the U.S. Fish and Wildlife Service, California Department of Fish and Game, California Native Plant Society, California Environmental Quality Act, or any applicable regional plans, policies, or regulations.

The California Department of Fish and Game (CDFG) maintains an inventory of rare, endangered, and threatened species within the State of California. This inventory is known as the California Natural Diversity Database (CNDDB). A search of the CNDDB was performed for U.S. Geological Survey (USGS) quadrangle Riverside East, upon which the UCR campus is located, as well as the surrounding USGS quadrangles, including Riverside West, Fontana, Sunnymead, Steele Peak, and San Bernardino South. Refer to Table 4.4-1 (in Section 4.4.4 below) for database search results for sensitive plants and Table 4.4-2 for database search results for sensitive animals. Those species known to occur on the Riverside East and Riverside West quadrangles are indicated with an asterisk.

Invasive Species

An "invasive species" is defined as a species that is (1) nonnative to the ecosystem under consideration and (2) whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Invasive species can be plants, animals, and other organisms (e.g., microbes). Human actions are the primary means of invasive species introductions.

On the UCR campus, nearly all of the annual grasses in the undeveloped areas of the campus are nonnative and have long ago replaced the native grasses. There are also isolated stands of tree tobacco (*Nicotiana glauca*), a native but invasive weed, and several species of nonnative weeds such as Russian thistle (*Salsola kali*) and castor bean (*Ricinus communis*). However, the most common highly invasive species in the region, such as giant reed (*Arundo donax*), pampas grass (*Cortaderia sellanoa*), and broom (*Spartium* sp.), are generally not observed on campus.

Wildlife Movement

Due to the extent of urban and suburban development around the campus, few large movement corridors exist in the vicinity of UCR, as residential and commercial development and the I-215/SR-60 freeway create barriers to wildlife movement. Within the campus, small corridors exist along the arroyos on the East Campus; however, these drainage courses do not connect isolated habitats or habitat resources and have limited function as corridors for wildlife movement.

The large expanse of undeveloped land in the southeastern hills, including the Botanical Gardens, and nearby arroyos provide opportunities for wildlife connections between the Box Springs Mountains and Sycamore Canyon Park, about one-half mile south of UCR's southern tip (across the I-215/SR-60

freeway). These potential wildlife corridors are shown in Figure 4.4-2. Continued residential development east of the campus (in the area south of Picacho Drive and Mount Vernon Avenue) may further reduce opportunities for wildlife movement in this area, while the presence of the I-215/SR-60 freeway limits movements of land-based species across the freeway to underpasses and culverts.

4.4.3 Regulatory Framework

Federal

Endangered Species Act of 1973

Under the Federal Endangered Species Act (FESA), the Secretary of the Interior and the Secretary of Commerce, jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). FESA defines "endangered" species as those in danger of extinction throughout all or a significant portion of their range. A "threatened" species is any species that is likely to become an "endangered" species within the foreseeable future throughout all, or a significant portion of its range. Additional special-status species include "candidate" species and "species of concern." "Candidate" species are those for which the U.S. Fish and Wildlife Service (USFWS) has on file enough information to propose listing as endangered or threatened. "Species of concern" are those for which listing is possibly appropriate but for which the USFWS lacks sufficient information to support a listing proposal. A species that has been "delisted" is one whose population has met its recovery goal target and is no longer in jeopardy of extinction.

The USFWS and the National Marine Fisheries Service (NMFS) share responsibility for administration of the Endangered Species Act, with the USFWS generally taking jurisdiction over terrestrial species. The Endangered Species Act defines "critical habitat" as an area or areas with physical or biological features that are essential to the conservation of a species and may need special management or protection. A designation does not set up a preserve or refuge. Nor does it affect private, local, county, or State landowners unless they are undertaking a project on their land that requires Federal funding, permits, or authorization. Critical habitat does not require landowners to carry out any special management actions, nor does it restrict the use of their land. However, because the coastal California gnatcatcher is listed as a threatened species under the Act, individuals are prohibited from engaging in unauthorized activities that will harm the species. If a project that requires Federal funding, permitting, or authorization is planned in an area proposed as critical habitat, and if the agency determines that the project may affect the coastal California gnatcatcher or its proposed critical habitat, then the agency responsible for providing the funds or permit would have to conference with the USFWS.

On April 24, 2003, the USFWS re-proposed to designate critical habitat for the coastal California gnatcatcher on approximately 495,795 acres of land in portions of Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties. Areas proposed as critical habitat are identified in 13 separate units; Unit 12 encompasses the entire UC Riverside Campus. However, this species is very closely associated with sage scrub vegetation, which is found mainly within the southern portion of the East Campus, generally east and south of South Campus Drive, including the southeastern hills (refer to

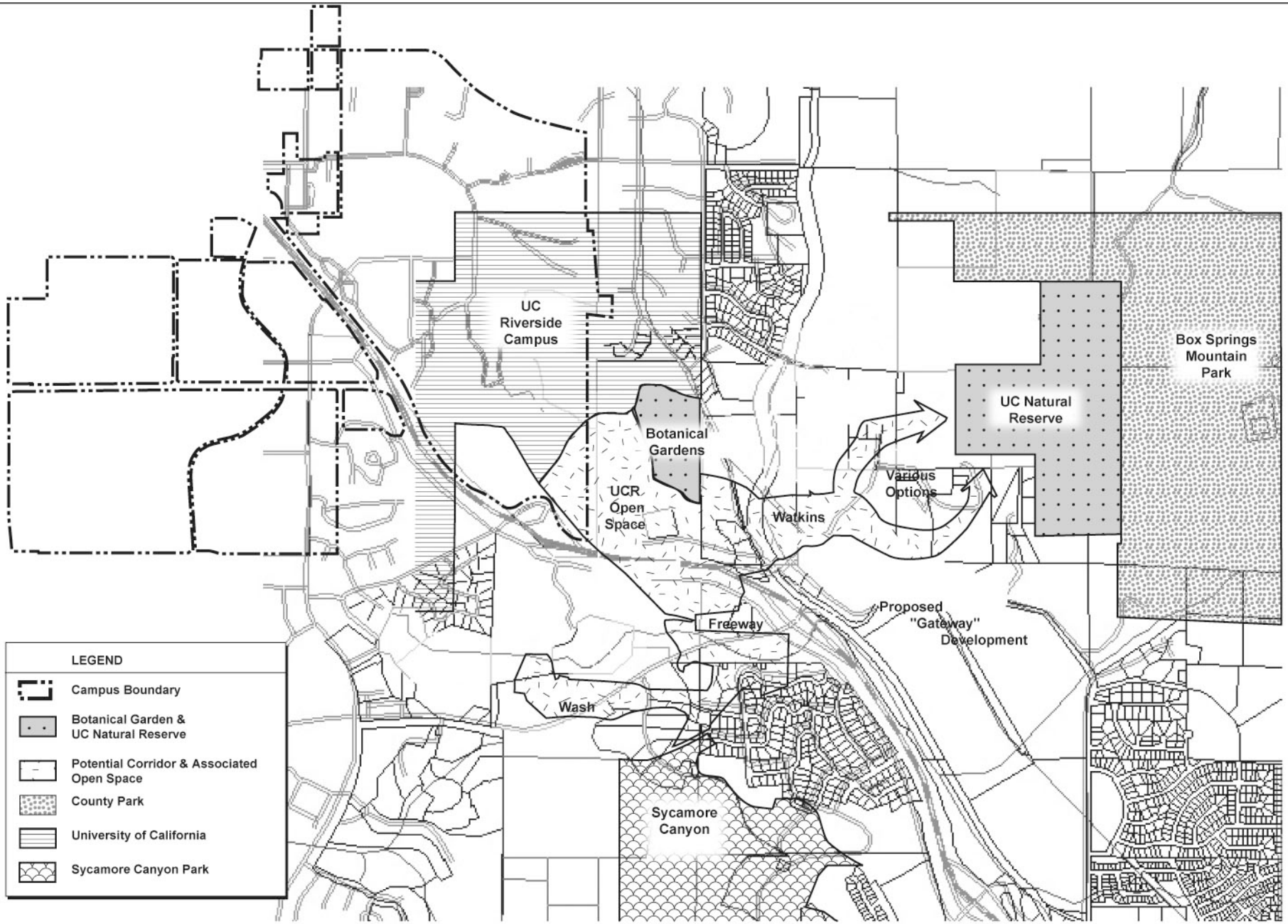

FIGURE **4.4-2**

UCR Area Wildlife Corridor

Not to Scale

10537-00

Source: UC Riverside Center for Conservation Biology

UC Riverside

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Figure 4.4-1). The Western Riverside County Multiple-Species Habitat Conservation Plan (MSHCP) also addresses the gnatcatcher, and does not identify any portion of the UCR campus as containing critical areas for the gnatcatcher (or any other species). It does however include portions of the surrounding hills, as identified in Subunit 2 – Sycamore Canyon West of the MSHCP. The portion of the campus that is within the boundaries of the MSHCP is shown in Figure 4.4-3.

Under the Federal Endangered Species Act, activities that could affect (e.g., take) species listed as endangered, threatened, or proposed for threatened or endangered require consultation with the USFWS (or NMFS, per 16 U.S.C. Section 1532(19)). Taking is defined by FESA [Section 3(19)] to mean "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." Thus, any activity on the UCR campus that could result in an incidental take of a listed species requires consultation with the USFWS.

Migratory Bird Treaty Act

Pursuant to the Migratory Bird Treaty Act (MBTA) of 1918, as amended in 1972, federal law prohibits the taking of migratory birds or their nests or eggs (16 U.S.C. Section 703). The statute states:

> Unless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill…any migratory bird, any part, nest, or egg of any such bird…included in the terms of the [Migratory Bird] conventions…

The Act covers the taking of any nests or eggs of migratory birds, except as allowed by permit pursuant to 50 CFR, Part 21. Disturbances causing nest abandonment and/or loss of reproductive effort (i.e., killing or abandonment of eggs or young) may also be considered a "take." This regulation seeks to protect migratory birds and active nests.

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment:

- Accipitridae (kites, hawks, and eagles)
- Cathartidae (New World vultures)
- Falconidae (falcons and caracaras)
- Pandionidae (ospreys)
- Strigidae (typical owls)
- Tytonidae (barn owls)

The provisions of the 1972 amendment to the MBTA protects all species and subspecies of the families listed above.

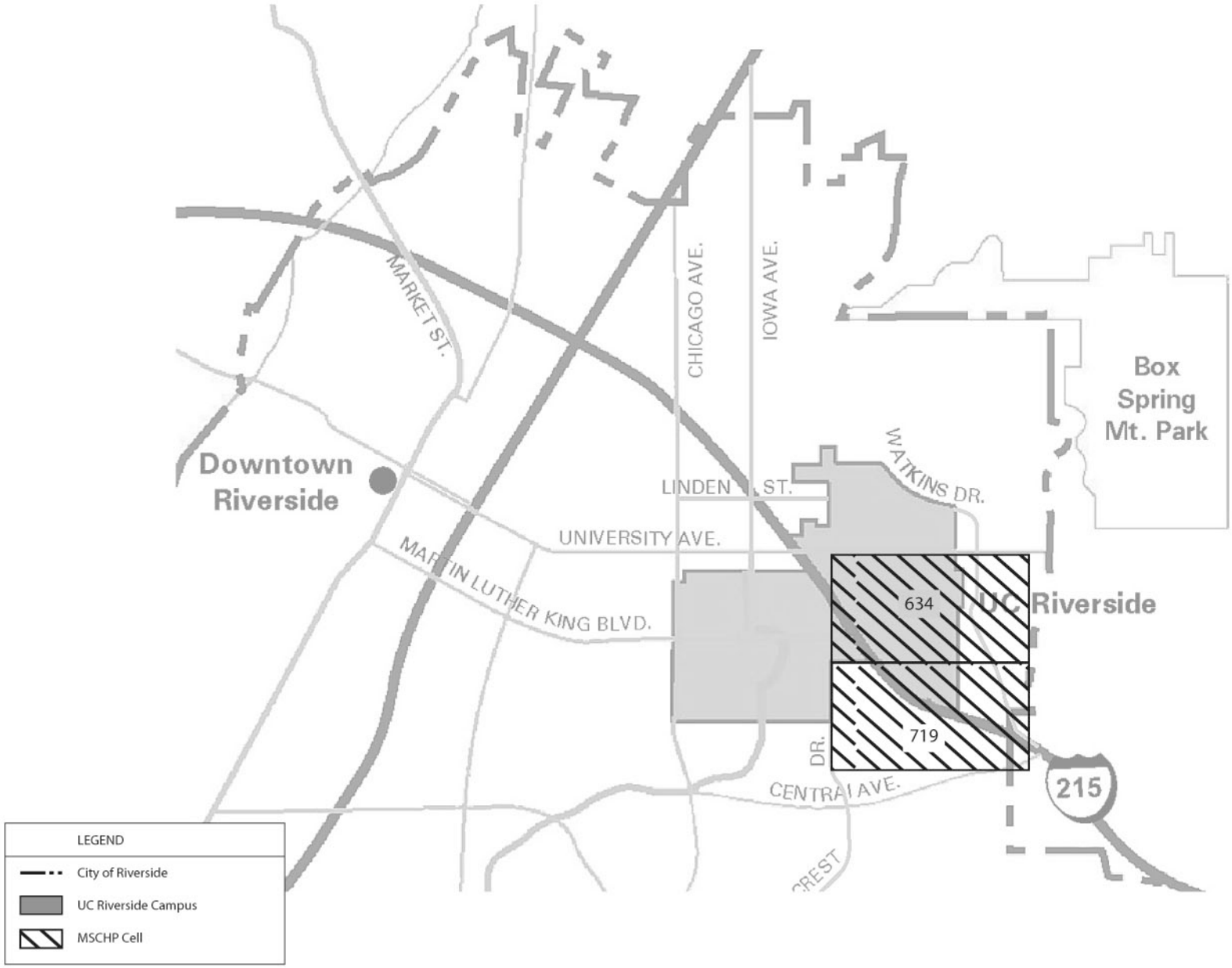

FIGURE **4.4-3**
MSHCP Subunit Cells within UCR

Not to Scale

10537-00

Source: Final MSHCP, 2003

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Clean Water Act of 1972

Section 404 of the Clean Water Act authorized the U.S. Army Corps of Engineers to issue permits for the discharge of dredged or fill material into waters of the United States. Waters of the U.S. include intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, and wetlands adjacent to any water of the U.S. [33 CFR Part 328].

A permit from the US Army Corps of Engineers (USACE) must be obtained for any dredge or fill activities within jurisdictional waters of the U.S, including intermittent streams and wetlands. During the permit review process the USACE determines the type of permit appropriate for the proposed project. There are two types of permits issued by the USACE:

- General Permits issued on a State, regional and nationwide basis, which cover a variety of activities including minimal individual and cumulative adverse affects. These permits fit into specific categories established by the USACE.
- Individual Permits issued for a case-specific activity.

In addition to the Section 404 permit, Section 401 of the Clean Water Act requires that a 404-permit Applicant obtain a certificate from the appropriate State agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to grant certification or waive the requirement for permits under Section 401 is delegated by the State Water Resources Control Board to the Regional Water Quality Control Boards. Pursuant to the Porter-Cologne Act, each of California's nine regional boards must prepare and periodically update basin plans that set forth water quality standards for surface and groundwater, as well as actions to control point and nonpoint sources of pollution. Basin plans offer an opportunity to achieve wetlands protection through enforcement of water quality standards. No USACE 404 permit is valid under the Clean Water Act unless it is "certified" by the State. Therefore, Regional Water Quality Control Boards may effectively veto or add conditions to any USACE permit.

State

California Endangered Species Act

The California Endangered Species Act (CESA) and the Native Plant Protection Act authorize the California Fish and Game Commission to designate endangered, threatened, and rare species and to regulate the taking of these species (§§2050–2098, Fish & Game Code). CESA defines "endangered" species as those whose continued existence in California is jeopardized. State listed "threatened" species are those not presently threatened with extinction; however, they may become endangered if their environments change or deteriorate. Protection of special-status species is detailed in Sections 2050 and 2098 of the Fish and Game Code. The California Code of Regulations (Title 14, Section 670.5) lists animal species considered endangered and threatened by the State.

Section 2080 of the California Fish and Game Code prohibits the taking of State listed plant and animals. The CDFG also designates "fully protected" or "protected" species as those that may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFG. Species designated as fully protected or protected may or may not be listed as endangered or threatened.

CDFG's Natural Heritage Division administers the State's endangered species program. CDFG maintains a list of designated endangered and threatened plant and animal species. The Fish and Game Commission determines whether species will be listed as threatened or endangered. In addition to listing, the Commission can afford interim protection to "candidate species."

The CDFG also maintains a list of animal "Species of Special Concern," most of which are species whose breeding populations in California may face extirpation. Although these species have no legal status, the CDFG recommends consideration of them during analysis of the impacts of proposed projects to protect declining populations and avoid the need to list them as endangered in the future.

Formal consultation must be initiated with the California Department of Fish and Game (CDFG) for projects that may have an adverse effect on a State-listed species. As a trustee agency for this project, however, the CDFG would be provided with environmental documentation whenever there could be an impact to biological resources.

CEQA Treatment of Listed Plant and Animal Species

The Federal Endangered Species Act and California Endangered Species Act protect only those species formally listed as threatened or endangered. Thus, an environmental review undertaken in accordance with CEQA often treats rare but nonlisted plant and animal species as equivalent to listed species if such species satisfy the minimum biological criteria for listing. In general, the CDFG considers species on Lists 1A, 1B, or 2 of the *California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California* (Skinner and Pavlik 1994) as qualifying for consideration under this CEQA provision. Species on the Native Plant Society's List 3 or 4 may, but generally do not, qualify for protection under this provision.

California Wetlands Conservation Policy (1993)

California wetlands policy is more restrictive than the federal wetland policy. The goal of California Wetlands Conservation Policy (1993) is to ensure no net loss of wetlands within the State. This policy, incorporated in an executive order by Governor Pete Wilson, also encourages a long-term net gain in the State's quantity, quality, and permanence of wetlands acreage and values. Interpretation of this order indicates that any developer wishing to fill in wetlands for construction of new development must perform mitigation in the form of constructed wetlands elsewhere at ratios ranging from 2:1 to 10:1. In addition to the U.S. Army Corps of Engineers, State regulatory agencies claiming jurisdiction over wetlands include the California Department of Fish and Game and the State Water Resources Control Board.

California Department of Fish and Game

The California Department of Fish and Game (CDFG), through provisions of the State of California Administrative Code, is empowered to issue agreements for any alteration of a river, stream, or lake where fish or wildlife resources may adversely be affected. Streams (and rivers) are defined by the presence of a channel bed and banks and at least an intermittent flow of water. CDFG regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by CDFG. Under Sections 1602 of the California Fish and Game Code, CDFG issues Lake or Streambed Alteration Agreements for projects impacting the bed, channel, or bank of any river, stream.

Typically, wetland delineations are not performed in order to obtain CDFG Agreements. The reason for this is that CDFG generally includes any riparian habitat present within the jurisdictional limits of streams and lakes. Riparian habitat includes willows, mulefat, and other vegetation typically associated with the banks of a stream or lake shoreline. In most situations, wetlands associated with a stream or lake would fall within the limits of riparian habitat. Thus, defining the limits of CDFG jurisdiction based on riparian habitat will automatically include any wetland areas.

All on-campus arroyos with riparian habitat for a portion of their length would come under the jurisdiction of the California Department of Fish and Game (CDFG) in that future development would result in an alteration to the stream. In drainages with extensive riparian habitat (such as the Gage Basin), the CDFG's jurisdiction extends outside the bed and banks to the furthest outer extent of the riparian cover. In the absence of riparian habitat, the presence of a bed and banks defines the jurisdictional limits of the CDFG. Thus, most, if not all, of the arroyos on campus are subject to the jurisdiction of the CDFG with respect to stream alterations.

In addition to wetlands regulation, Section 3503.5 of the Fish and Game Code of California protects birds of prey. The Code states:

> It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.

Section 3513 of the Fish and Game Code of California duplicates the federal protection of migratory birds. The Code states:

> It is unlawful to take or possess any migratory nongame bird as designated in the Migratory Bird Treaty Act or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Treaty Act.

Local

Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP)

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 1.2 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. Cells 634 and 719 do include portions of the southeastern campus. Conservation within these cells focuses on upland scrub and coastal sage scrub habitats that are found in the hills southeast of the campus.

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 6354 and 719 of the MSHCP do include portions of the campus, the plan does not identify any portion of the UCR for conservation.

City of Riverside

The City of Riverside General Plan, adopted by the City in 1994, includes a section on Resource Conservation. Goals NR 1 and NR 2 relate to biological resources within the city. Goal NR 1 aims "to preserve and protect ridgelines, hillsides, arroyos, the Santa Ana River Corridor, and other significant natural features," while Goal NR 2 is "to protect the biotic communities and critical habitats for endangered species throughout the General Plan area." Although the UCR campus is located within the City of Riverside, the University of California is constitutionally exempt from local land use regulation.

4.4.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps 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 2005 LRDP to result in direct or indirect impacts to biological resources, existing land uses were compared to those uses proposed in the 2005 LRDP.

Because most biological resources on the UCR campus are found in undeveloped areas, described herein as *Natural* and *Naturalistic* biological resource types, the assessment of the potential to affect sensitive biological resources is focused on the potential for future development to affect those areas. In addition, because migratory birds may utilize mature trees on campus to forage, roost, or nest, the potential for future development to impact migratory birds is focused on the potential loss of mature trees.

Potential impacts to special status biological resources were assessed using relevant available literature regarding the status and known distribution of special status plant and animal species observed, reported, or having the potential to occur on the campus. In addition to the other sources noted above, the following sources were used to assess potential impacts to special status species:

- California Natural Diversity Data Base (CNDDB, 2003) query results for the following USGS 7.5-Minute quadrangles: Riverside East, Riverside West, Fontana, Sunnymead, Steele Peak, and San Bernardino South.

- USFWS Lists of Endangered and Threatened Species That May Occur In, Or Be Affected by Projects in the selected USGS quadrangles (Riverside East, Riverside West, Fontana, Sunnymead, Steele Peak, and San Bernardino South).
- California Native Plant Society Electronic Inventory of Rare and Endangered Vascular Plants of California. 2003

Once all data sources were reviewed, a final list of special status species with moderate or greater potential to occur in the vicinity of the project area was compiled (refer to Table 4.4-1 and Table 4.4-2, below).

Each of the listed species was evaluated for its potential to occur on the UCR campus, based on the existence of suitable habitat characteristics on campus, as noted in published "Preferred Habitat" data from the above sources data as well as two species lists developed by the UCR Botanic Gardens staff and UCR faculty, *Birds of the UCR Botanic Gardens* (Weiss et al., 2000) and *Bobcats and Lizards and Insects, Oh My!* (University of California, Riverside 2003). In addition, the frequency of occurrence, recentness of sightings, and locations of past occurrences were also used to determine the probability of each species to occur within on the UCR campus. Potential for species occurrence was determined as follows:

1. No potential to occur
    - Preferred habitat does not occur on campus or is severely degraded on campus
    - Species has not been observed in campus vicinity (i.e. Riverside West and Riverside East USGS quadrangles)
2. Low potential to occur
    - Habitat may occur on campus; however, it occurs in limited quantities or is of degraded quality
    - Species may have been observed in campus vicinity; however, observations have been infrequent
3. Moderate potential to occur
    - Habitat of moderate quantity and quality occurs on campus
    - Species has been observed in campus vicinity with moderate frequency
4. High potential to occur
    - Ideal, high quality habitat occurs on campus
    - Species has been observed within Riverside East or Riverside West USGS quadrangles within the past two decades
5. Known to occur
    - Species has been observed on campus

Table 4.4-1 Rare and Endangered Plants Potentially Occurring in Project Area

Common Name	*Scientific Name*	*Federal/State Status*	*Global/State Rank*	*CNPS List / R-E-D Code*	*Preferred Habitat*	*Potential for Occurrence on Campus*
Munz's Onion	*Allium munzii*	Endangered/Threatened	G1/S1.1	1B/3-3-3	Heavy clay soils in chaparral, coastal scrub, woodland, grassland	Low potential to occur
Marsh Sandwort*	*Arenaria paludicola*	Endangered/Endangered	G1/S1.1	1B/3-3-2	Freshwater marshes and swamps	No potential to occur; no habitat on campus
Bristly Sedge	*Carex comosa*	None/None	G5/S2	2/3-3-1	Marshes and swamps	No potential to occur; no habitat on campus
Payson's Jewel-flower	*Caulanthus simulans*	None/None	G3/S3.2	4/1-2-3	Open, dry areas	Moderate potential to occur
Smooth Tarplant*	*Centromadia pungens* ssp. *laevis*	None/ None	G5T2/S2.1	1B/2-3-3	Grasslands, particularly alkali meadow and alkali scrub	No potential to occur; no alkali soils on campus
Parry's Spineflower*	*Chorizanthe parryi* var. *parryi*	None/None	G2T2?/S2.1	3/?-2-3	Coastal scrub, chaparral	Moderate potential to occur (known to occur in campus area in 1917)
Long-spined Spineflower	*Chrorizanthe polygonoides* var. *longspina*	None/None	G5T3/S2.2	1B/2-2-2	Chaparral, coastal scrub, meadows, grasslands	Low potential to occur
Salt Marsh Bird's Beak	*Cordylanthus maritimus* ssp. *maritimus*	Endangered/Endangered	G3T2/S2.1	1B/2-2-2	Coastal salt marsh, coastal dunes	No potential to occur
Slender-horned Spineflower*	*Dodecahema leptoceras*	Endangered/Endangered	G1/S1.1	1B/3-3-3	Chaparral, coastal scrub	Low potential to occur
Many-stemmed dudleya	*Dudleya multicaulis*	None/None	G2/S2.1	1B/1-2-3	Diegan sage scrub and Valley grasslands	Moderate potential to occur
Santa Ana River Wollystar	*Eriastrum densifolium* ssp. *sanctorum*	Endangered/Endangered	G4T1/S1.1	1B/3-3-3	Coastal scrub, chaparral, esp. sandy soils on river floodplains	Low potential to occur
California Bedstraw	*Galium californicum* ssp. *primum*	None/None	G5T1/S1.1	1B/3-2-3	Chaparral, lower montane coniferous forest	Very low potential to occur
Coulter's Goldfields*	*Lasthenia glabrata* ssp. *coulteri*	None/None	G4T3/S2.1	1B/2-3-2	Alkaline soils in playas, sinks, and grasslands	No potential to occur; no habitat present
Robinson's Pepper-grass*	*Lepidium virginicum* var. *robinsonii*	None/None	G5T2/SH	1B/3-2-2	Dry soils in chaparral and coastal scrub	Low potential to occur

Table 4.4-1 Rare and Endangered Plants Potentially Occurring in Project Area

Common Name	*Scientific Name*	*Federal/State Status*	*Global/State Rank*	*CNPS List / R-E-D Code*	*Preferred Habitat*	*Potential for Occurrence on Campus*
Parish's Desert-Thorn*	*Lycium parishii*	None/None	G3/S2S3	2/2-1-1	Coastal scrub, Sonoran desert scrub	Low to moderate potential to occur
Pringle's Monardella	*Monardella Pringlei*	None/None	GX/SX	1A/*	Sandy hills in coastal scrub	Low potential to occur
Little Mousetail	*Myosurus minimus* ssp. *apus*	None/None	G5T2Q/S2.2	3/2-3-2	Alkaline soils in vernal pools	No potential to occur; no habitat present
Parish's Gooseberry	*Ribes divaricatum* var. *parishii*	None/None	G4T1/S1.1	1B/3-3-3	*Salix* (willow) swales in riparian woodland habitat	Very low potential to occur
Gambel's Water Cress	*Roripppa gambelii*	Endangered/Threatened	G1/S1.1	1B/3-3-2	Marshes and swamps	No potential to occur; no habitat present
Salt Spring Checkerbloom	*Sidalcea neomexicana*	None/None	G4?/S2S3	2/2-2-1	Alkali springs and marshes	No potential to occur; no habitat present

Project Area = USGS Quadrangles Riverside East, Riverside West, Fontana, Sunnymead, San Bernardino South, and Steele Peak

* denotes Quadrangles Riverside East and Riverside West only

KEY TO SPECIAL STATUS DESIGNATIONS

Within the **CDFG's Natural Diversity Data Base**, rankings are provided for priority of preservation for terrestrial plant communities that are considered sensitive. Rankings are divided into four categories:

- Less than six element occurrences (EOs), or less than 1,000 individuals, or less than 2,000 acres:
  - **S1.1** Very threatened (the majority of occurrences are threatened, or the majority of individuals are in occurrences which are threatened)
  - **S1.2** Threatened (the element has some but not the majority of occurrences threatened and/or has occurrences that will soon be threatened)
  - **S1.3** No threats known (no obvious or predictable threats exist)
- Six to twenty EOs, or 1,000 to 3,000 individuals, or 2,000 to 10,000 acres:
  - **S2.1** Very threatened
  - **S2.2** Threatened
  - **S2.3** No threats known
- Twenty-one to 100 EOs, or 3,000 to 10,000 individuals, or 10,000 to 50,000 acres:
  - **S3.1** Very threatened
  - **S3.2** Threatened
  - **S3.3** No threats known
- Greater than 100EOs, or greater than 10,000 individuals, or greater than 50,000 acres:
  - **S4** Apparently secure; clearly lower than an S3 but reasons exist to be concerned, for example, there is some threat or narrow habitat (such as the Sierra Nevada)
  - **S5** Demonstrably secure to ineradicable
  - **SH** All California sites are historical

California Native Plant Society: The California Native Plant Society (CNPS) is a nonprofit organization that collects and publishes information about California plant species that are of concern because of declines in population or other problems. The CNPS Inventory of Rare and Endangered Vascular Plants of California is considered to be a reliable source of information about sensitive plants in California. Their status categories are identified below:

Table 4.4-1 Rare and Endangered Plants Potentially Occurring in Project Area

Common Name	*Scientific Name*	*Federal/State Status*	*Global/State Rank*	*CNPS List / R-E-D Code*	*Preferred Habitat*	*Potential for Occurrence on Campus*

List 1A This includes plant species that are presumes to be extinct in California. These species have not been collected within California for many years.

List 1B This includes plants that are considered by CNPS to be rare, threatened, or endangered in California and elsewhere in their range.

List 2 This includes plants that are considered by CNPS to be rare, threatened, or endangered in California, but are more common elsewhere.

List 3 This includes plants about which more information is needed. These plants have been recommended for inclusion in a sensitive category by CNPS, but adequate information on their distribution and abundance is not available to determine their correct status.

List 4 This includes plant species of limited distribution in the State, which CNPS feels should be carefully monitored. List 4 is considered to be a "watch list" for plants, and taxa included could be moves to List 1B or 2 if they become less common.

The CNPS R-E-D Code distinguishes among the separate factors for list assignment. These are rarity, which addressed the number of individuals and distribution within California; endangerment, which addresses the plant's vulnerability to extinction for any reason; and distribution, which describes the overall range of the plant. Together, these three elements form the R-E-D Code. Each element in the code is divided into three classes of degrees of concern, represented by the number 1, 2, or 3. In each case, higher numbers represent greater concern. The system is summarized as follows:

- **R**: Rarity
  1. Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time.
  2. Distributed in a limited number of occurrences, occasionally more if each occurrence is small
  3. Distributed in one to several highly restricted occurrences, or present in such small numbers that it is seldom reported
- **E**: Endangerment
  Not Endangered
  Endangered in a portion of its range
  Endangered throughout its range
- **D**: Distribution
  More or less widespread outside California
  Rare outside California
  Endemic to California

Source: CDFG, FWS, January 2003

Table 4.4-2 Rare and Endangered Animals Potentially Occurring in Project Area

Common Name	Scientific Name	Federal/State Status	Global/State Rank	CDFG Status	Preferred habitat	Potential to occur on Campus
Cooper's Hawk	*Accipiter cooperii*	None/None	G4/S3	SC	Riparian woodland	Known to occur (Weiss, et. al.)
Tricolored Blackbird*	*Agelaius tricolor*	None/None	G3/S3	SC	Requires open water and protected nesting substrate	Known to occur (Weiss, et. al.)
Long-eared Owl	*Asio otus*	None/None	G5/S3	SC	Riparian bottomlands or riparian live oak, with adjacent open land	Low to moderate potential to occur
Burrowing Owl	*Athene cunicularia*	None/None	G4/S2	SC	Open grasslands, deserts, and scrublands	Known to occur (Weiss, et. al.)
Santa Ana Sucker*	*Catostomus santaanae*	Threatened/None	G1/S1	SC	Cool, clear, running water with sand-rubble-boulder bottoms	Low potential to occur
Northwestern San Diego Pocket Mouse*	*Chaetodipus (=Perognathus) fallax fallax*	None/None	G4T3/S2S3	SC	Coastal scrub, chaparral, grasslands, sagebrush	Low to moderate potential to occur
Orange-throated Whiptail*	*Cnemidophorus hyperythrus*	None/None	G5/S2	SC	Low-elevation coastal scrub, chaparral, and valley-foothill hardwoods	Known to occur
Coastal Western Whiptail*	*Cnemidophorus tigris multiscutatus*	None/None	G5T3?/S2S3		Primarily open desert areas, also woodland and riparian areas	Low potential to occur
Western Yellow-billed Cuckoo*	*Coccyzus americanus occidentalis*	None/Endangered	G5T2T3/S1		Riparian forest along broad floodplains of large rivers	Moderate potential to occur- low potential to breed
Northern Red-diamond rattlesnake*	*Crotalus ruber ruber*	None/None	G4T3T4/S2	SC	Chaparral, woodland, grassland, and desert areas	Low to moderate potential to occur
San Bernardino Kangaroo Rat	*Dipodomys merriami parvus*	Endangered/None	G5T1/S1	SC	Scrub vegetation found on alluvial fans and floodplains	Low potential to occur
Stephens' Kangaroo Rat*	*Dipodomys stephensi*	Endangered/ Threatened	G2/S2		Primarily grasslands, also coastal scrub and sagebrush	Moderate potential to occur
White-tailed kite	*Elanus leucurus*	None/None	G5/S3		Open grasslands, meadows, or marshes	Known to occur (Weiss, et. al.)
Arroyo Chub*	*Gila Orcutti*	None/None	G2/S2	SC	Slow water streams with mud or sand bottoms	Low potential to occur

Table 4.4-2 Rare and Endangered Animals Potentially Occurring in Project Area

Common Name	*Scientific Name*	*Federal/State Status*	*Global/State Rank*	*CDFG Status*	*Preferred habitat*	*Potential to occur on Campus*
Bald Eagle	*Haliaeetus leucocephalus*	Threatened/ Endangered	G4/S2		Ocean shore, lake margins, rivers	Low potential to occur
Loggerhead shrike	*Lanius ludovicianus*	None/None	G4/S4	SC	Woodlands, savannah, desert oases, scrubs, and washes	Low potential to occur
Los Angeles Pocket Mouse*	*Perognathus longimembrus brevinasus*	None/None	G5T1?/S1?	SC	Lower elevation grasslands and coastal sage communities	Low to moderate potential to occur
San Diego Horned Lizard*	*Phrynosoma Coronatum Blainvillei*	None/None	G4T3T4/S2S3	SC	Coastal sage scrub and chaparral	Moderate potential to occur
Coastal California Gnatcatcher*	*Polioptila californica californica*	Threatened/None	G2T2/S2	SC	Coastal sage scrub	Known to occur (Weiss, et. al.)
Delhi Sands Flower-loving Fly	*Rhaphiomidas terminatus abdominalis*	Endangered/None	G1T1/S1		Found only in areas of Delhi Sands soil formation	Low potential to occur
Santa Ana Speckled Dace*	*Rhinichthys osculus* (subspecies 3)	None/None	G5T1/S1	SC	Permanent flowing streams	Low potential to occur
Western spadefoot* toad	*Scaphiopus hammondii*	None/None	G3?/S3?	SC	Primarily grassland, occasionally hardwood woodlands	Moderate potential to occur- low potential to breed
Least Bell's Vireo	*Vireo bellii pulillus**	Endangered/ Endangered	G5T2/S2		Riparian or dry river bottoms	Low to moderate potential to occur

Project Area = USGS Quadrangles Riverside East, Riverside West, Fontana, Sunnymead, San Bernardino South, and Steele Peak

* denotes Quadrangles Riverside East and Riverside West only

KEY TO SPECIAL STATUS DESIGNATIONS

U.S. Fish and Wildlife Service: The United States Fish and Wildlife Service (USFWS) has the authority to enforce the Federal Endangered Species Act. Their status categories are identified below:

- **FE** Federally listed endangered species.
- **FT** Federally listed threatened species.
- **FPE** Proposed for listing as an endangered species by the federal government.
- **FPT** Proposed for listing as a threatened species by the federal government.
- **SC** Species of concern (Category 2 candidate species) for federal listing as threatened or endangered, for which available information is available to support a proposed ruling or listing.

California Department of Fish and Game: As part of the Non-Game Heritage Program, the California Department of Fish and Game (CDFG) has identified a list of special plants

Table 4.4-2 Rare and Endangered Animals Potentially Occurring in Project Area

Common Name	*Scientific Name*	*Federal/State Status*	*Global/State Rank*	*CDFG Status*	*Preferred habitat*	*Potential to occur on Campus*

and terrestrial plant communities that are considered sensitive. The CDFG also maintains a list of special animals. Species that are listed with one of the codes below include those that are formally listed by State authorities, those that have been proposed for listing, and those that are CDFG species of special concern, indicating that they are included in the Natural Diversity Data Base and that population levels are being monitored because of concerns about decreases. Codes include:

SE State-listed endangered species.

ST State-listed threatened species.

SCE Candidate for listing as endangered by the State of California

SCT Candidate for listing as threatened by the State of California.

SSC CDFG species of special concern.

CFP CDFG "fully-protected" species, as described in the State Fish and Game Code. These species include many of those that are listed as threatened or endangered, and some additional species.

SP Special plant. These species are considered sensitive, but have no other status. This includes taxa that, for example, are peripheral to the major portion of their range, and that are threatened by extirpation in California.

SA CDFG Special Animal. Those wildlife species that are listed without codes but are noted with 'SA' fall into one or more of the following categories:

- Taxa that may be considered rare or endangered under §15380(d) of the CEQA Guidelines
- Taxa that are biologically rare, very restricted in distribution or declining throughout their range, but not currently threatened with extirpation
- Populations in California that may be peripheral to the major portion of a taxon's range, but that are threatened with extirpation in California

Taxa that are closely associated with a habitat that is declining in California at an alarming rate (e.g., wetlands, riparian, old growth forest, desert aquatic systems, native grasslands)

Sources: CNDDB Database, USFWS & CDFG, updated January 2003; Birds of the UCR Botanic Gardens, www.gardens.ucr.edu/wildlife/birdlist.html, UCR,

Potential impacts to species that were identified as "moderate potential to occur," "high potential to occur," or "known to occur" were inferred based on the potential for implementation of the 2005 LRDP to adversely affect preferred species habitat. Since no specific building or site plans are available, it was assumed that development of an area (as proposed by the 2005 LRDP) would result in the complete removal of all biological resources on that site, as conditioned by the implementation of relevant LRDP Planning Strategies and continued implementation of existing campus Programs and Practices (identified for each impact as appropriate). Where these conservation measures would not reduce impacts below the level of significance, mitigation measures were developed to reduce impacts to the species and their habitat to a less-than-significant level.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on biological resources if it would result in any of the following:

- Result in a substantial adverse effect, either directly or through habitat modifications, on any candidate, sensitive, or special status species identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS)
- Result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFG or USFW
- Result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with any local applicable policies or ordinances protecting biological resources
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to Be Significant related to biological resources; therefore, all potential biological resource impacts are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations; or by the California Department of Fish and Game (CDFG); or by the U.S. Fish and Wildlife Service (USFWS)?

Impact 4.4-1 **Development allowed under the 2005 LRDP could result in adverse impacts to candidate, sensitive, or special status plant and wildlife species. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in the development of 7.1 million gsf of new academic buildings and support facilities that would convert undeveloped open space and agricultural teaching and research fields into the site of new buildings and facilities and replace existing structures. The development of new structures and facilities could result in adverse impacts to candidate, sensitive, or special status plant and wildlife species.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies are relevant to preservation of candidate, sensitive, or special-status plant and wildlife species:

PS Open Space 1 — *Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*

PS Open Space 2 — *Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration.*

PS Open Space 3 — *In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.*

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.*

PS 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.*

PS Conservation 2 — *Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.*

PS Conservation 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.*

In addition, continued implementation of the following existing campus Programs and Practices would also reduce potential impacts to sensitive biological resources:

PP 4.4-1(a) — *To reduce impacts to the Natural Open Space Reserve area:*

(i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access.

(ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas.

(This is identical to Aesthetics PP 4.1-2(c) and Hydrology PP 4.8-3(a).)

PP 4.4-1(b) — *To reduce disturbance of Natural and Naturalistic Open Space areas:*

(i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists.

(ii) Removal of native shrub or brush shall be avoided, except where necessary.

(iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access.

(iv) Excess fill or construction waste shall not be dumped in washes.

(v) Vehicles or other equipment shall not be parked in washes or other drainages.

(vi) Overwatering shall be avoided in washes and other drainages.

(vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc.

(This is identical to Aesthetics PP 4.1-2(d) and Hydrology 4.8-3(b).)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new buildings on the UCR campus, including academic, housing, recreation, support, and parking. The

majority of these new buildings and facilities would be developed within areas that are currently occupied by landscaped open space, agricultural teaching and research fields, or existing development (e.g., buildings or surface parking lots). Development within these areas would result in the removal of landscaping and mature trees. New development within *Natural* and *Naturalistic* areas would be limited to (1) sensitively sited utility projects within *Natural* open space area in the southeast hills[11]; (2) utility and pedestrian/bicycle circulation improvements in *Naturalistic* arroyos; and (3) new student housing and recreational facilities in the undeveloped *Naturalistic* area east of the Pentland Hills and Lothian Residence Halls. In addition, the 2005 LRDP also proposed development in areas that are adjacent to *Natural* and *Naturalistic* areas.

As noted above, a search of the CNDDB (and other sources) revealed that both rare and endangered plants and animals designated by the California Department of Fish and Game might occur within *Natural* and *Naturalistic* areas of the campus. In addition, observations within the UCR Botanic Gardens identified that several sensitive species, including some listed as endangered, threatened, or candidate under the federal and State Endangered Species Acts, have been observed on the campus. These plant and wildlife species, identified in Table 4.4-1 and Table 4.4-2 respectively, include the coastal California gnatcatcher (*Polioptila c. californica*), Cooper's hawk (*Accipiter cooperii*), tricolored blackbird (*Ageliaus tricolor*), burrowing owl (*Athene cunicularia*), white-tailed kite (*Elanus leucurus*), western yellow-billed cuckoo (*Coccyzus americanus occidentalis)*, Stephens' kangaroo rat (*Dipodomys stephensi*), San Diego horned lizard (*Phrynosoma Coronatum Blainvillei)*, western spadefoot toad (*Scaphiopus hammondii)*, orange-throated whiptail (*Cnemidophorus hyperythrus*), and Parry's spineflower (*Chorizanthe parryi* var. *parryi)*. Any development within *Natural* and *Naturalistic* areas could, therefore, result in a substantial direct or indirect (e.g., removal of foraging habitat) adverse effect or impacts to candidate, sensitive, or special status plant and wildlife species.

Development within *Landscaped* and *Agricultural* areas of the campus could result in the removal of lawns, ornamental shrubs, and other landscaping in these areas, but this is unlikely to affect any candidate, sensitive, or special-status plant and wildlife species. Removal of mature trees and native and non-native grasslands, which provide roosting and foraging opportunities for special status avian species, including raptors, could however adversely impact protected bird species. Infill development south of South Campus Drive would occur in an area that is interspersed with existing buildings, landscaped open space, teaching and research orchards, and small areas of ruderal and annual grasslands that may contain plant or animal species associated with the adjacent coastal sage scrub in the southeast hills. Development along University Avenue (between Canyon Crest Drive and the I-215/SR-60 freeway) would result in the removal of mature trees in this area, some of which may provide cover or nesting sites for candidate, sensitive, or special status plant and wildlife species associated with the adjacent Gage Basin.

With respect to the southeast hills, implementation of the LRDP Planning Strategies *Open Space 1* and *2* would require that the area be preserved, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for

[11] This is envisioned to include an additional 7 million gallon water storage tank adjacent to the existing storage tank to decrease reliance on back-up water pressure from the City for fire fighting capabilities (refer to Section 4.12 Public Services for detail).

erosion, screening, and restoration. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat values be restored. LRDP Planning Strategy *Conservation 1* specifies that natural resources including native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. These areas would include habitat that is potential foraging areas for raptors and other special status species. In addition, continued implementation of PP 4.4-1(a) and PP 4.4-1(b) would further protect and reduce disturbance in the southeast hills. However, because some limited utility development would occur, impacts to candidate, sensitive, or special status plant and wildlife species in the southeast hills could still occur.

With respect to arroyos, LRDP Planning Strategy *Conservation 1* specifies that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible, while *Conservation 2* ensures that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat values be restored. In addition, continued implementation of PP 4.4-1(b) would reduce disturbance of *Naturalistic* areas, including arroyos. Implementation of these strategies and PPs would reduce potential impacts to arroyos; however, because some development (e.g., utilities or bike paths) could still occur within the *Naturalistic* zones, and because development near arroyos could result in indirect impacts, substantial adverse affects to candidate, sensitive, or special status plant and wildlife species in on-campus arroyos could occur.

With respect to landscaped and agricultural areas on-campus, LRDP Planning Strategy *Conservation 3* specifies that future development continue the practice of increased building densities on campus, particularly in academic zones, in order to preserve open space and conserve limited land resources and the agricultural fields. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat values are restored. LRDP Planning Strategy *Open Space 4* provides for landscaped buffers and setbacks along campus edges, which is intended to reduce the loss of existing biological resources in those areas. LRDP Planning Strategy *Conservation 2* requires that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible.

With respect to the loss of raptor and special-status avian foraging habitat located throughout the project area, LRDP Planning Strategy *Conservation 1* specifies that native habitat, including native grasslands, and mature trees be preserved to the extent feasible, while *Conservation 3* ensures that buildings be preferably sited in higher density areas to preserve open space and conserve limited land resources and agricultural fields. LRDP Planning Strategy *Open Space 1* and *2* would require that the natural hillsides on the southeast campus area be preserved, and stipulate no major facilities be allowed there (except for sensitively sited utility projects). *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat and foraging values be restored. The implementation of these Planning Strategies would reduce impacts to raptor and special-status avian

foraging habitat and substantial adverse affects resulting from the loss of foraging areas would not be expected.

Implementation of the LRDP Planning Strategies identified above and continued implementation of PP 4.4-1(a) and PP 4.4-1(b) would reduce potential impacts to sensitive species in *Natural* and *Naturalistic* areas and retain mature trees where feasible. However, even with implementation of the identified Planning Strategies and continued implementation of existing Programs and Practices, implementation of the 2005 LRDP could result in substantial adverse affects to candidate, sensitive, or special status plant and wildlife species, depending on the extent and location of development.

To reduce potential impacts, MM 4.4-1(a) requires a pre-construction survey to determine whether any special status plants and animals are present within *Natural* and *Naturalistic* areas, including the coastal sage scrub, riparian, annual grasslands, and ruderal grasslands. If the survey determines that special status plants are present, MM 4.4-1(b) requires consultation with appropriate agencies regarding the development of a mitigation plan to protect or relocate the affected species, or provide replacement habitat.

MM 4.4-1(a) *To ensure that potential impacts to special status plant and wildlife species that are known to occur within the Natural and Naturalistic areas of the campus or have a moderate or greater potential to occur (refer to Tables 4.4-1 and 4.4-2) are reduced to less than significant levels, the campus shall conduct surveys for special-status species prior to disturbance of areas or habitat that are known to support the species. The University shall conduct surveys of the area(s) in accordance with applicable protocols or guidelines developed by the CDFG and/or USFWS, as applicable.*

MM 4.4-1(b) *If surveys determine that special-status plant or animal species are present, the following measures shall be implemented:*

(i) Vegetation: If sensitive plant species or habitats are observed and would be impacted by project-related activities, a qualified botanist shall develop a species or habitat-specific replacement plan. This plan shall include elements to limit project impacts such as the relocation of individual specimens, the collection of seeds and replanting, or the preservation and movement of topsoil that contains the seed bank. If replacement within the project area is not feasible, then an approved mitigation bank shall be used. For either case, on-site or off-site revegetation, a mitigation monitoring plan shall be prepared and approved by the CDFG prior to start of construction.

(ii) Wildlife: If special status wildlife is found within areas of proposed construction and avoidance is not feasible, the campus will consult with the appropriate agencies, obtain any necessary State or federal permits, and prepare a mitigation plan for those special-status species that would be impacted. The mitigation plan would be subject to the approval of applicable

State and/or federal agencies, and may include measures such as the relocation of the affected species, protection of other on-campus habitat where the plant or animal is known to occur, or site preparation and revegetation to create suitable habitat.

With implementation of MM 4.4-1(a) and MM 4.4-1(b), implementation of the 2005 LRDP would not result in a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations; or by the California Department of Fish and Game; or by the U.S. Fish and Wildlife Service, and this impact would be *less than significant*.

Threshold	Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations; or by the CDFG; or by the USFWS?

Impact 4.4-2 **Development allowed under the 2005 LRDP could result in development within the designated critical habitat area for the California gnatcatcher, or could result in the loss or modification of drainage channels that provide riparian habitat, which could result in substantial adverse effects to gnatcatcher or riparian habitat. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in some limited development in the southeast hills and development of additional academic buildings in the area south of South Campus Drive, which generally corresponds to the only area of the campus that is designated as critical habitat of the California gnatcatcher which contains vegetation communities (e.g., coastal sage scrub) that this species is known to be associated with. Implementation of the 2005 LRDP would also result in minor development within or across arroyos (e.g., utilities or pedestrian or bicycle paths), result in development of new housing and recreational space in the area occupied by the eastern portion of the arroyo that runs between the Pentland Hills and Lothian Residence Halls, and permit development in areas adjacent to existing arroyos. Therefore, implementation of the 2005 LRDP has the potential to result in an adverse effect to riparian habitat or designated California gnatcatcher habitat.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, described above under Impact 4.4-1, which would reduce potential impacts to coastal sage scrub and riparian habitat. With respect to the southeast hills, implementation of the LRDP Planning Strategies *Open Space 1* and *2*, would require that the area be preserved as a *Natural* Open Space Reserve, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for erosion, screening, and restoration. Implementation of LRDP Planning Strategy *Open Space 3* would ensure that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat

values be restored. Implementation of LRDP Planning Strategy *Conservation 1* would specify that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. In addition, the campus would continue to implement PP 4.4-1(a) (to limit disturbance of the southeast hills) described above under Impact 4.4-1, which would reduce potential impacts within the designated gnatcatcher habitat.

Even with implementation of the identified LRDP Planning Strategies and continued implementation of existing Programs and Practices, implementation of the 2005 LRDP could result in adverse affects to California gnatcatcher habitat in the southeast hills as a result of limited development within that area (e.g., sensitively sited utility projects). Implementation of MM 4.4-1(a) and MM 4.4-1(b), described above under Impact 4.4.1, would require pre-construction surveys to determine whether any special status animals, such as the California gnatcatcher, are present within the designated gnatcatcher habitat area, and if present, development of a mitigation plan to protect or relocate the affected birds, or provide replacement habitat.

With respect to riparian habitat in arroyos, LRDP Planning Strategy *Conservation 1* specifies that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible, while *Conservation 2*, described above under Impact 4.4-1, ensures that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees whenever possible. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat values be restored. Continued implementation of PP 4.4-1(b) (to limit disturbance of existing arroyos), described above under Impact 4.4-1, would further protect the *Naturalistic* on-campus areas, including riparian habitat. In addition, the campus would continue to implement PP 4.4-2(a) to reduce or avoid impacts to riparian (and wetland) habitats whenever feasible.

PP 4.4-2(a) *Impacts to riparian and wetland habitats shall be avoided, wherever feasible. If avoidance is not feasible, then the impacts will be evaluated as part of the Clean Water Act section 404 and California Fish and Game Code section 1602 permit application process. If mitigation is required, the University of California will develop and implement a resource mitigation program to be reviewed and approved by the USACE and CDFG through the state and federal permit process. The permit shall mitigate the habitats such that they are consistent with the Clean Water Act and CDFG policy of "no net loss" of wetland. Furthermore, impacted wetlands and/or riparian vegetation that cannot be avoided would be replaced at a ratio approved by the USACE and CDFG. If replacement within the area is not feasible, then an approved mitigation bank or other off-site area will be used. The revegetation of impacted areas or mitigation parcels will be performed by a qualified restoration specialist and shall be conducted only on sites where soils, hydrology, and microclimate conditions are suitable for riparian habitat. First priority will be given to areas that are adjacent to existing patches of native habitat.*

Development in areas in close proximity to arroyos could result in indirect impacts to riparian habitat due to deposition of sediment eroded from adjacent construction sites. Implementation of the 2005 LRDP could result in development in the areas that are adjacent to arroyos, which could include Parking Lot 13 (south of Big Springs Road), Parking Lot V10 (east of East Campus Drive), east of Pentland Hills and Lothian Residence Halls (west of Valencia Hill Drive), north of University Avenue (west of Canyon Crest Drive and south of the Gage Basin), and the Bannockburn Village site (north of the Gage Basin). Consistent with the requirements of the General Construction Activity Stormwater Permit adopted by the California State Water Resources Control Board, for all construction projects that involve grading or earthmoving activities on sites greater than 1 acre in size, the campus would continue to implement PP 4.4-2(b) to control erosion from construction sites.

PP 4.4-2(b)

In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):

(i) Public education and outreach on stormwater impacts

(ii) Public involvement/participation

(iii) Illicit discharge detection and elimination

(iv) Pollution prevention/good housekeeping for facilities

(v) Construction site stormwater runoff control

(vi) Post-construction stormwater management in new development and redevelopment

(This is identical to Geology and Soils PP 4.6-2(b) and Hydrology PP 4.8-3(d).)

With implementation of existing campus PP 4.4-2(b), indirect impacts to riparian habitat in on-campus arroyos would be avoided by controlling erosion from on-campus construction activities.

With implementation of the above-identified Planning Strategies, campus Programs and Practices, and Mitigation Measures, implementation of the 2005 LRDP would not result in a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations; or by the California Department of Fish and Game; or by the U.S. Fish and Wildlife Service, and this impact would be reduced to a *less-than-significant* level.

Threshold	Would the project have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Impact 4.4-3 **Development allowed under the 2005 LRDP could result in a substantial adverse effect on federally protected wetlands through direct removal, filling, or hydrological interruption. With implementation of the relevant 2005 LRDP Planning**

Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.

Implementation of the 2005 LRDP could result in minor development, such as extension of utility lines or pedestrian or bicycle paths, within *Naturalistic* open space areas, including arroyos that may contain federally protected seasonal wetlands or jurisdictional waters of the United States. This minor development could result in direct impacts to wetlands, by removal, filling, or hydrological interruption.

Securing a Streambed Alteration Agreement from the CDFG, and a Section 404 permit under the CWA, would protect riparian corridors and jurisdictional wetland and non-wetland waters (e.g., stream channels) within the project area. If impacts to these areas would occur, the University must obtain the permits prior to any grading or construction that may impact a riparian area, stream channel, or wetland, as applicable. While the final conditions of the permit or agreement will be determined through coordination with these agencies, the provisions of these permits would meet the State and federal "no net loss" wetlands policy.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, described above under Impact 4.4-1, which would reduce potential impacts to wetlands. With implementation of LRDP Planning Strategy *Conservation 1* native habitat, remnant arroyos, and mature trees would be preserved to the extent feasible, while implementation of LRDP Planning Strategy *Conservation 2* would ensure that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees. With implementation of LRDP Planning Strategy *Open Space 3*, existing landforms, native plant materials, and trees would be ensured preservation, when feasible, and where appropriate, habitat values would be restored. In addition, the campus would continue to implement existing campus PP 4.4-1(a) and PP 4.4-1(b) (to reduce disturbance of *Naturalistic* areas, including arroyos), described above under Impact 4.4-1, and PP 4.4-2(a) and (b) (to evaluate impacts and require development of mitigation plans for impacts to wetlands), described above under Impact 4.4-2, which would reduce potential adverse effects to federally protected wetlands.

Even with implementation of the identified Planning Strategies and continued implementation of existing Programs and Practices, implementation of the 2005 LRDP could result in substantial adverse affects on federally protected wetlands. In addition to the requirements associated with CWA Section 404 and 401 permitting and CDFG Section 1600, and requirements of PP 4.4-2(a), the University shall implement the following mitigation measure to reduce these potential impacts.

Implementation of MM 4.4-3(a) would require a delineation of potentially jurisdictional areas, and if present would require a 1:1 replacement of removed wetland habitat, and MM 4.4-3(c) would require measures to ensure that wetland-dependent species are introduced into the replacement habitat.

MM 4.4-3(a) *When habitat that could be regulated by the Clean Water Act (Section 404) would be impacted, either directly or indirectly, the University shall perform a*

jurisdictional and/or wetland delineation to assess the extent of the jurisdictional area(s).

MM 4.4-3(b) *If wetland or riparian habitat would be removed as a result of project development, the University shall restore or enhance wetland or riparian habitat as required by the applicable State and/or federal resource agencies.*

MM 4.4-3(c) *Any proposal for wetland creation or enhancement (pursuant to MM 4.4-3(b) above) will be based upon the completion of soils, hydrologic and other studies confirming the feasibility of the creation or enhancement proposal and shall include United States Army Corps of Engineers (USACE)–approved measures intended to promote occupancy by special status and other wetland-dependent species (e.g., plantings, collection of topsoil and inoculation of target areas).*

With implementation of MM 4.4-2(a), MM 4.4-3(a), and MM 4.4-3(b), implementation of the 2005 LRDP would not result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means, and this impact would be reduced to a *less-than-significant* level.

Threshold	Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Impact 4.4-4 **Development under the 2005 LRDP could interfere with the movement of native resident or migratory wildlife species or corridors. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Wildlife corridors link areas of suitable habitat that are otherwise separated by areas of non-suitable habitat such as rugged terrain, changes in vegetation, or human disturbance. The fragmentation of open space areas by urbanization creates isolated "islands" of wildlife habitat. In the absence of habitat linkages that allow movement between islands, studies have concluded that some wildlife species, especially the larger and more mobile mammals, would not persist over time because fragmentation limits infusion of new individuals and genetic information. Corridors mitigate the effects of this fragmentation by (1) allowing animals to move between remaining habitats, thereby permitting depleted populations to be replenished and promoting genetic exchange; (2) providing escape routes from fire, predators, and human disturbances, thus reducing the risk of catastrophic events (such as fire or disease) that could lead to local extinction; and, (3) serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and shelter.

Implementation of the 2005 LRDP would result in some limited development (e.g., utility projects such as water storage tanks) in the southeast hills. The large undeveloped areas of the southeastern hills, including the Botanical Gardens and nearby arroyos provide opportunities for wildlife connections between the Box Springs Mountains and Sycamore Canyon Park, and do function as potential corridors in that they connect two or more habitat patches that would otherwise be fragmented or isolated from one another (refer to Figure 4.4-2). However, none of the proposed development within this area would construct physical barriers to movement across the southeast hills that would significantly limit or restrict wildlife movement across the area. Additional development associated with the implementation of the 2005 LRDP would result in minor development within or across existing arroyos (e.g., utilities or pedestrian or bicycle paths). These small arroyos could be used for small-scale local wildlife foraging and movement, but because the surrounding developments that encircle these arroyos isolate them from any other *natural* or *naturalistic* areas, the arroyos do not connect two isolated habitats or habitat resources, and thus they would not be considered "wildlife corridors." Although development in these areas could interfere with the movement of native resident wildlife at some locations, it would be limited to small-scale localized wildlife uses such as foraging. The 2005 LRDP would also result in infill development within the academic core of the campus, expansion of the academic core, redevelopment of the Canyon Crest Family Student Housing and Bannockburn complex, and development of new academic, housing, recreation support, and parking facilities on the West Campus. Development within *Landscaped* and *Agricultural* areas would result in the removal of mature trees, some of which could be used by migratory birds as perching or nesting sites. There are no known native wildlife nursery sites on the UCR campus that would be affected by implementation of the 2005 LRDP.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, described above under Impact 4.4-1, which would reduce potential impacts to the *Natural* Open Space Reserve in the southeast hills. LRDP Planning Strategies *Open Space 1* and *2* would require that the area be preserved, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for erosion, screening, and restoration. With implementation of LRDP Planning Strategy *Open Space 3*, existing landforms, native plant materials, and trees would be ensured preservation, when feasible, and where appropriate, habitat values would be restored. Implementation of LRDP Planning Strategy *Conservation 1* would specify that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. In addition, continued implementation of PP 4.4-1(a), described above under Impact 4.4-1, would further protect and reduce disturbance in the *Natural* Open Space Reserve. Since most of the southeast hills would remain undisturbed, wildlife movement within and across the southeast hills would be largely unaffected by implementation of the 2005 LRDP.

With respect to arroyos, LRDP Planning Strategy *Conservation 1* specifies that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible, while *Conservation 2* ensures that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce storm water runoff, and maintain existing landscapes, including healthy mature trees, whenever possible. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat values be restored. In addition, continued implementation

of PP 4.4-1(b), described above under Impact 4.4-1, would reduce disturbance of *Naturalistic* areas, including arroyos. Implementation of these LRDP Planning Strategies and existing campus Programs and Practices would preserve existing on-campus arroyos. Implementation of these LRDP Planning Strategies and existing campus Programs and Practices would preserve existing on-campus arroyos. To the extent that existing arroyos serve as corridors for wildlife movement, these corridors would remain available.

With respect to mature trees, LRDP Planning Strategy *Conservation 1* specifies that natural resources including native habitat, remnant arroyos, and mature trees be preserved to the extent feasible, while *Conservation 2* ensures that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees, whenever possible. LRDP Planning Strategy *Open Space 5* requires retention of the Carillon Mall as a major Campus Landmark Open Space. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible. Implementation of these LRDP Planning Strategies and existing campus Programs and Practices would reduce potential impacts to mature trees; however, the 2005 LRDP could still result in the removal of mature trees, which may serve as perching or nesting sites of migratory birds or raptors. It is anticipated that any migratory birds or raptors using mature trees as perching sites would leave the site upon the initiation of construction activities. Removal of a mature tree due to construction could result in the loss of an occupied nest for migratory or raptor species of special concern, which would constitute substantial interference ("take" or "destruction") with a migratory species of special concern (per Section 3513 of the Fish and Game Code of California) or raptors (per Section 3503.5 of the Fish and Game Code of California).

To mitigate the potential interference with protected migratory birds and raptors that could result from the destruction of mature trees during the breeding season, MM 4.4-(a) requires a pre-construction survey to determine whether migratory avian species of special concern or raptors are nesting within a construction site, and MM 4.4-(b) requires the provision of a buffer zone if occupied nests are found, as well as the development, in consultation with the CDFG, of additional protective measures that respond to the specific circumstances observed.

MM 4.4-4(a) *Prior to the onset of construction activities that would result in the removal of mature trees and would occur between March and mid-August, surveys for nesting special status avian species and raptors shall be conducted on the affected portion of the campus following USFWS and/or CDFG guidelines. If no active avian nests are identified on or within 250 feet of the construction site, no further mitigation is necessary.*

MM 4.4-4(b) *If active nests for avian species of concern or raptor nests are found within the construction footprint or a 250-foot buffer zone, exterior construction activities shall be delayed within the construction footprint and buffer zone until the young have fledged or appropriate mitigation measures responding to the specific situation have been developed and implemented in consultation with USFWS and CDFG.*

In addition, LRDP Planning Strategies *Open Space 4*, and *6* and 7, described in Section 4.1 (Aesthetics) under Impact 4.1-2, would require the provision of landscaped buffers along some campus edges, creation of a new Campus Landmark Open Space (The Grove) on the West Campus, and provision of neighborhood parks and tot lots in the family housing areas. Each of these strategies would result in the creation of new landscaped open spaces, which will include trees that would partially replace mature trees lost as a result of development.

With implementation of the above Planning Strategies, campus Programs and Practices, and MM 4.4-(a) and MM 4.4-(b), implementation of the 2005 LRDP would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites, and this impact would be reduced to a *less-than-significant* level.

Threshold	Would the project conflict with any local policies or ordinances protecting biological resources?

Impact 4.4-5 **Development under the 2005 LRDP would be in substantial conformance with local applicable policies protecting biological resources. With implementation of relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*.**

UCR is a part of the University of California, a constitutionally created unit of the State of California. As a State entity, UC is not subject to municipal plans, policies, and regulations, such as the County and City General Plans or local ordinances. While not subject to local jurisdiction, UCR values biological resources such as mature trees and native habitat, and the 2005 LRDP includes a range of Planning Strategies to promote preservation of existing habitat, natural features, and mature trees, as discussed in Chapter 3 (Project Description). The County of Riverside General Plan, approved October 2003, does not apply to the campus as it includes only unincorporated areas of the County. Because the campus values its relationship with the local communities, it voluntarily reviewed the policies in the City of Riverside General Plan Framework for consistency and found that the 2005 LRDP development is consistent with the General Plan goals and policies relating to natural resources. Relevant General Plan policies include preservation of sage scrub habitat, retention of natural ridgeline areas, and preservation of rare and endangered species habitat. Implementation of LRDP Planning Strategies *Open Space 1* and *2*, described above under Impact 4.4-1, would require that the area be preserved as a *Natural* Open Space Reserve, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for erosion, screening, and restoration. LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved when feasible and where appropriate, habitat values be restored. LRDP Planning Strategy *Conservation 1* specifies that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. These strategies are consistent with City of Riverside General Plan goals related to preservation of biological resources. As such, impacts from the 2005 LRDP on local applicable policies protecting biological resources would be *less than significant*.

Threshold	Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?

Impact 4.4-6 **Implementation of the 2005 LRDP would not conflict with an adopted habitat conservation plan or natural community conservation plan. *No impact* would result.**

A Multiple Species Habitat Conservation Plan (MSHCP) has been approved and adopted by Riverside County in 2003 as a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on conservation of both species and associated habitats to address biological and ecological diversity conservation needs in Western Riverside County. In addition to being a Habitat Conservation Plan pursuant to Section 10(a)(1)(B) of the Federal Endangered Species Act of 1973, this MSHCP would also serve as a Natural Communities Conservation Plan under the Natural Communities Conservation Planning (NCCP) Act of 1991. The plan would provide a coordinated reserve system and implementation program that facilitates the preservation of biological diversity as well as maintaining the region's quality of life. The goal is to assemble a 510,000-acre reserve system for conservation of up to 146 plant and wildlife species in the MSHCP.

The Western Riverside County MSHCP boundaries encompass approximately 1.26 million acres, including a portion of the UCR campus. Conservation target areas within the plan include areas surrounding 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, as shown on Figure 4.4-3, the plan does not identify any portion of the UCR for conservation. Thus, implementation of the 2005 LRDP would not conflict with the MSHCP. In addition, the 2005 LRDP includes a range of Planning Strategies that ensure the preservation of the coastal sage habitat in the southeast hills as a *Natural* Open Space Reserve and protects the *Naturalistic* open space areas on campus, which include riparian habitat in on-campus arroyos. These LRDP Planning Strategies are described above under Impact 4.4-1. LRDP Planning Strategies *Open Space 1* and *2* would require that the area be preserved, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for erosion, screening, and restoration. With implementation of LRDP Planning Strategy *Open Space 3*, existing landforms, native plant materials, and trees would be ensured preservation, when feasible, and where appropriate, habitat values would be restored. Implementation of LRDP Planning Strategy *Conservation 1* would specify that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. In addition, continued implementation of PP 4.4-1(a), described above under Impact 4.4-1, would further protect and reduce disturbance in the *Natural* Open Space Reserve. Since most of the southeast hills would remain undisturbed, wildlife movement within and across the southeast hills would be largely unaffected by implementation of the 2005 LRDP. The 2005 LRDP would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan, because *no impact* would result.

4.4.5 Cumulative Impacts

The geographic context for the analysis of cumulative biological impacts includes the County of Riverside, which contains a number of sensitive biological species, communities, and wildlife. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the County of Riverside General Plan and development of the off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis).

Except for the Box Springs Mountains to the east and the southeastern hills, the UCR campus is generally surrounded by urbanized uses in the City of Riverside. Land uses adjacent to the campus consist mostly of residential neighborhoods and commercial uses located along the major streets. However, the southeastern portion of the campus is bordered by sparse residential development interspersed with undeveloped areas that extend into the Box Springs Mountains to the east. Because the areas that surround the campus are largely developed or are precluded from development (such as certain areas within the Box Springs Mountains), projects that would occur near the campus are limited to the conversion of some vacant lands and low-density uses to higher-density uses. Although areas near the campus that would be subject to development are generally urban in nature, *Natural* and *Naturalistic* areas throughout the County of Riverside will be subject to future development as acknowledged in the *County of Riverside General Plan Program EIR* (County of Riverside 2003), which would result in the direct loss of sensitive natural communities and habitats, which would effect candidate, sensitive, and special status plant and wildlife species**,** riparian habitat and wetlands. Also, because development in these areas would occur without a comprehensive plan to address regional conservation issues, according to the *County of Riverside General Plan Program EIR*, implementation of individual development projects throughout the County would also result in implementation of conservation policies and mitigation measures on a case-by-case basis, which could result in preservation of fragmented habitat areas. Although this effect could be partially offset by policies and regulatory requirements, as well as proposed physical development constraints within Riverside County, potential development could have a significant cumulative impact would occur to the direct loss of sensitive natural communities and habitats—particularly coastal sage scrub and marsh (wetland) habitats—fragmentation of habitats, and loss of habitats that could reduce or eliminate movement corridors between viable habitat areas.

As described above in Section 4.4.4 (Impacts and Mitigation), most development proposed under the 2005 LRDP would occur in areas of landscaped open space, agricultural teaching and research fields, or existing development (such as buildings or surface parking lots). Some development would occur within and adjacent to *Natural* and *Naturalistic* areas. LRDP Planning Strategies and Programs and Practices would minimize disturbance where development would occur, and would require evaluation of site-specific impacts and mitigation of those effects on an individual basis. However, although development in *Natural* and *Naturalistic* areas would be constrained, field observations have identified several special status species and habitats on the campus, and rare and/or endangered plants and animals might occur within these areas and would be affected by the proposed project if potential habitat is reduced. While these impacts to special status species, riparian habitat, wetlands, and other sensitive communities described under Impacts 4.4-1, 4.4-2, and 4.4-3 would be mitigated on an individual basis, they would

contribute to the further loss of special status species and habitats. The proposed project would therefore contribute to the significant unavoidable cumulative impacts to special status species and habitats in the county.

As described above in Impact 4.4-4, development under the 2005 LRDP could result in minor development across existing arroyos (e.g., utilities or pedestrian or bicycle paths). Additionally, the removal of mature trees could reduce opportunities for nesting and perching for raptors and migratory birds. However, as described above, LRDP Planning Strategies would conserve the southeastern hills Open Space Area and not permit development, with the exception of sensitively sited utilities projects and natural resources such as native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. Consequently, to the extent that wildlife movement occurs along arroyos on the campus, these arroyos would remain available. Future campus flood control improvements would result in restoration of the University Arroyo, thereby improving its viability for wildlife movement. Likewise, because the majority of the southeastern hills would be preserved, as described above, and the affected portions would be adjacent to the campus, wildlife movement across this area would not be substantially affected by development under the 2005 LRDP. As the campus would preserve and potentially improve wildlife movement, the project's contribution to the significant cumulative impacts would not be cumulatively considerable.

4.4.6 References

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4.5 CULTURAL RESOURCES

4.5.1 Introduction

This section describes existing cultural resources at the UCR campus and describes whether implementation of the 2005 LRDP would cause a substantial adverse change in the significance of a historical or archaeological resource (as defined in Section 15064.5 of the CEQA Guidelines) or to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or result in the disturbance of any human remains, including those interred outside of formal cemeteries.

Data used in the preparation of this section came from various sources, including a cultural resources technical report prepared for the campus by CRM Tech in 2002 (and included as Appendix E), previous environmental documentation prepared for the UCR campus, site visits by EIP personnel, and other campus data sources. Bibliographic entries for reference materials appear in Section 4.5.6 (References) of this section.

One comment letter related to cultural resources was written in response to the Notice of Preparation circulated for the project. This letter recommended that the appropriate information center be contacted for a record search, a professional report be prepared if required, and the Native American Heritage Commission (NAHC) and appropriate Native American contacts be consulted. In addition, the letter stated that the EIR should include provisions for accidentally discovered cultural resources, disposition of recovered artifacts, and discovery of Native American human remains. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.5.2 Existing Conditions

Background

Prehistory

It is widely acknowledged that human occupation in what is now the State of California began 8,000 to 12,000 years ago. In attempting to describe and understand the cultural processes that occurred in the ensuing years, archaeologists have developed a number of chronological frameworks that endeavor to correlate the technological and cultural changes that are observable in archaeological records to distinct time periods. Unfortunately, none of these chronological frameworks has been widely accepted, and none has been developed specifically for the area known as the Inland Empire, the nearest ones being for the Colorado Desert and Peninsular Ranges area (Warren 1984) and for the Mojave Desert (Warren and Crabtree 1986).

Because archaeological sites found in this region usually contain relatively few artifacts and little or no material that is datable by absolute (e.g., radiocarbon) methods, most archaeologists tend to follow an adapted chronology based on a scheme that was first developed by William J. Wallace in 1955 (Wallace 1955, 1978; Warren 1968; Chartkoff and Chartkoff 1984; Moratto 1984). Although the beginning and

ending dates of the different horizons or periods may vary, the general framework of prehistory under this chronology consists of the following four periods:

- *Early Hunting Stage* (ca. 10,000 BC–6,000 BC)—Characterized by human reliance on big game animals, as evidenced by large, archaic-style projectile points and the relative lack of plant-processing artifacts
- *Millingstone Horizon* (ca. 6,000 BC–AD 1,000)—When plant foods and small game animals came to the forefront of subsistence strategy, and from which a large number of millingstones, especially well-made, deep-basin metates, were left
- *Late Prehistoric Period* (ca. AD 1,000–1,500)—During which a more complex social organization, a more diversified subsistence base—as evidenced by smaller projectile points, expedient millingstones and, later, pottery—and regional cultures and tribal territories began to develop
- *Protohistoric Period* (ca. AD 1,500–1,700s)—Ushered in long-distance contact with Europeans, and thereby led to the Historic Period

Ethnohistory

The northern Riverside area lies in a region where the traditional territories of three Native American groups overlapped: the Serrano of the San Bernardino Mountains, the Luiseño of the Perris-Elsinore region, and the Gabrielino of the San Gabriel Valley. Kroeber (1925, Plate 57) suggests that the Native Americans of the Riverside area were probably Luiseño, Reid (1968) states that they were Serrano, and Strong (1929) claims that they were Gabrielino. In any case, there also occurred a late influx of Cahuilla during the 19th century (Bean 1978).

Whatever the linguistic affiliation, Native Americans in the Riverside area exhibited similar social organization and resource procurement strategies. Villages were based on clan or lineage groups. Their home base sites are marked by midden[12] deposits, often with bedrock mortar features. During their seasonal rounds to exploit plant resources, small groups often ranged some distances in search of specific plants and animals. Their gathering strategies often left behind signs of special use sites, such as boulder slicks and metates (or grinding stones) at certain plant locations.

History

Regional Historical Context

The present-day Riverside area received its first European visitors during the early and mid-1770s, shortly after the beginning of Spanish colonization of Alta California in 1769. After the establishment of Mission San Gabriel in 1771, the area became one of the mission's principal rancherías, known at the time as Jurupa. Despite these early contacts, no Europeans are known to have settled in the area until after the creation of the Rancho Jurupa land grant in 1838, which encompassed what is now the northern portion of the City of Riverside. During the 1840s, a number of other ranchos were established in the vicinity, including two more that lay partially within the current city limits, La Sierra (Sepulveda) and El

[12] A midden is a mound of domestic refuse that may indicate the site of a prehistoric settlement

Sobrante de San Jacinto. The land area of UCR campus, however, was not included in any of these land grants, and thus remained unclaimed when California became a part of the United States in 1846.

In 1871, the town of Riverside was founded at the present-day downtown area, followed in the next few years by two other colonies in the Arlington–La Sierra area. These three separate areas eventually merged in 1875, and the City of Riverside was incorporated in 1883. The campus, a part of Riverside's eastern "highlands," was not part of any of these early colonies, and was not incorporated into the city at the time. Situated at higher elevations than the original Riverside Canals, the upper plain remained largely undeveloped until 1885/86, when the completion of the Gage Canal greatly increased the acreage under irrigation in the Riverside area, marking the beginning of a new phase in the city's growth.

During the 1870s and 1880s, amid a land boom that swept through southern California, the young community of Riverside grew rapidly. The most important boost to Riverside's early prosperity came with the introduction of the navel orange in the mid-1870s. Its instant success in Riverside led to the rapid spread of citrus cultivation throughout southern California, and propelled Riverside to the forefront of the citrus industry. In 1893, after a bitter local political dispute, Riverside split itself from San Bernardino County, and became the county seat and the dominant urban center of the newly created Riverside County. Since the mid-twentieth century, with the increasing diversification of Riverside's economic livelihood, much of Riverside's once extensive citrus acreage has given way to urban expansion. Nevertheless, the "citrus culture" that developed from the City's orange-dominated past continues to be an integral part of the community identity to the present time.

Paleontological Resources

Paleontological resources (fossils) are the remains or traces of prehistoric animals and plants. Fossils are important scientific and educational resources because of their use in documenting the presence and evolutionary history of particular groups of now-extinct organisms, reconstructing the environments in which these organisms lived, and determining the relative ages and geologic processes of the strata (sediment or rock layers) in which they occur.

The rocks and sediment underlying the campus are considered unlikely to be fossil-bearing. The granitic bedrock mapped as part of the Val Verde tonalite (an intrusive igneous rock formation) is exposed as bouldery outcrops on steep hillsides in the southeast hills on the UCR campus. Tonalite forms as molten rock, beneath Earth's surface, that would be hot enough (several thousand degrees) to prevent the preservation of fossils. Most of the campus is underlain by older alluvium (river deposits), generally consisting of sands and silty sands, typically with minor to moderate amounts of clay in near-surface horizons (upper 2 to 5 feet). The clay content is a result of a long period of weathering of the granitic rocks in the older alluvium, rather than from the deposition of clay in standing water. Consequently, the likelihood of the older alluvium having significant fossil content is very low. Geologically recent west-flowing stream channels (such as University Arroyo) are partially filled with younger sandy alluvium. This is, essentially, loosely deposited stream sand reworked from the older alluvium and the tonalite, and as a result, the likelihood of the younger alluvium having significant fossil content is very low. Portions of the East Campus contain fill soils, associated with construction of structures and roads. This material

generally consists of reworked younger and older alluvium, and the likelihood of the fill having significant fossil content is very low.

Existing Cultural Resources on the Campus

CRM Tech conducted a cultural resources records search for the campus at the California Historical Resource Information System (CHRIS) Eastern Information Center (EIC), which is located on the UCR campus and serves as the official (State-recognized) cultural resource records repository for Riverside County. The records search included examination of maps and records on file at the EIC for previously identified cultural resources in or near the project area, and existing cultural resources reports pertaining to the vicinity. Previously identified cultural resources include properties designated as California Historical Landmarks, Points of Historical Interest, or Riverside County Landmarks, as well as those listed in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR).

On January 8 and 9, 2002, Bruce Love and Bai "Tom" Tang carried out the field reconnaissance by conducting a "wind-shield survey" in various portions of the campus and spot-checking selected locations where historic-era buildings or archaeological features were previously noted or are likely to occur. Aside from inspecting the current conditions of the previously identified historical/archaeological sites, the main purpose of the field reconnaissance was to examine and evaluate the sensitivity of the campus for unidentified cultural resources.

Previous Cultural Resources Surveys

According to records on file at the Eastern Information Center, the campus has not been extensively surveyed for cultural resources (archival research was completed during the preparation of the 1990 LRDP). Three relatively small-scale surveys have occurred in the eastern portion of the campus, along the foot of the rolling hills to the southeast of the central campus (in conjunction with the construction of the USDA Salinity Lab), and a pair of linear surveys bisected the western portion of the campus, across the university's agricultural teaching and research fields. Through these surveys and other previous investigations, eight historic-era buildings and two archaeological sites have been formally documented in the various historical resources inventories maintained by the State Office of Historic Preservation (OHP). These resources are discussed in further detail in the section below.

Within a 1-mile radius of the campus, 20 cultural resources studies have occurred on various parcels of land or linear features, some of them adjacent to the campus boundaries. These studies resulted in the recordation of 25 prehistoric archaeological sites and six historic-era sites within the scope of the records search. The prehistoric sites include 23 that consisted of bedrock milling features and two that consisted of possible hunting blinds. Among the six historic-era sites are the 1920s University Heights Junior High School and the 1930s Peter J. Weber House, both of which have been designated historical landmarks by the City of Riverside and nominated to the National Register of Historic Places, with the former officially listed in the register in 1993. The other six historic-era sites include a small segment of the Southern

Pacific (now Union Pacific) Railroad, two trash dumps, remnants of an irrigation system, and two residential structures built in the 1910s to 1920s.

Archaeological Sites

The California Historical Resource Information System lists two archaeological sites that have been recorded within the UCR campus, as listed below.

- *Site CA-RIV-495*. Located on a slope in the southeast hills, this prehistoric site was first identified in 1971, and its presence was confirmed in 1990 (Broadbent 1971; LSA 1990). Typical of prehistoric sites occurring in the surrounding area, Site CA-RIV-495 was described as a single grinding slick on a bedrock outcrop, with no associated artifacts (Broadbent 1971).
- *Site CA-RIV-4768H*. This site represents the historic Gage Canal, which traverses the West Campus. Constructed in 1885–1886 by Matthew Gage, the Gage Canal played an instrumental role in the development of the "highlands" to east of the first colonies in present-day Riverside, and continues to serve as source of irrigation water today. For that reason, it has been designated a historical landmark by the City of Riverside. However, on the UCR campus, the canal retains little historic integrity to relate to its period of significance.

In the general vicinity of Site CA-RIV-495, a cursory field inspection of the southeast hills resulted in the discovery of a previously undocumented boulder with two grinding slicks; this resource has been recorded since its discovery. Additional information on this site can be obtained from the California Historical Resource Information System Eastern Information Center. It is possible that additional prehistoric bedrock milling features, which are quite common in the Riverside area, may remain unrecorded in the southeast hills on the East Campus.

The majority of the remainder of the East Campus has been developed with academic and support uses, and large areas of grading and fill placement underlie these developed areas. Substantial ground disturbance has, therefore, occurred in these areas, and surface evidence of archaeological resources is not likely to be encountered. Further, no archaeological materials have been uncovered during excavation or grading associated with development of the campus core on the East Campus, and this area is not considered sensitive for archaeological resources.

In the agricultural fields to the south of Martin Luther King Boulevard, the field reconnaissance encountered, along with the historic-era utility buildings, a number of other indicators of human activities dating perhaps to the early years of the Citrus Experiment Station or even before, such as old-growth domestic trees and well-weathered irrigation features. Furthermore, in contrast to the similar fields north of Martin Luther King Boulevard, where the land has been leveled and cleared, this southerly area retains much more of its original topographic features, which further suggests the potential of undisturbed historic-era archaeological resources.

Other Potential Cultural Resources

In addition to the historic-era buildings and archaeological features, other types of potential cultural resources, such as historic landscapes, should also be considered in future planning process. For example,

the tall palm trees lining Linden Street in the northeastern portion of the planning area, reportedly relics of an early ranch, clearly date to the historic period and, pending further research and analysis, may prove to have some historic interest, as discovered in many of the surrounding communities. Such nontraditional types of cultural resources essentially include all man-made features that are more than 45 years old.

Native American Cultural Sites

In spring 2003, UCR requested a Sacred Lands File Check from the State of California, Native American Heritage Commission (NAHC). According to the NAHC, the Sacred Lands File Check did not indicate the presence of sites of Native American cultural or religious value on the campus (Wood 2003).

Historic Resources of the UCR Campus

Definitions of Historical Resources

The National Register of Historic Places (NRHP) was established to recognize resources associated with the country's history and heritage. Structures and features must usually be at least 50 years old to be considered for listing on the NRHP, barring exceptional circumstances. Criteria for listing on the NRHP are significance in American history, architecture, archaeology, engineering, and culture as present in districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that are *(A)* associated with events that have made a significant contribution to the broad patterns of our history; *(B)* associated with the lives of persons significant in our past; *(C)* embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values, represent a significant and distinguishable entity whose components may lack individual distinction, or *(D)* have yielded, or may be likely to yield, information important in prehistory or history. Criterion D is usually reserved for archaeological and paleontological resources.

California created the California Register of Historical Resources (CRHR) to identify resources deemed worthy of preservation, modeling it closely after the NRHP. The criteria are nearly identical to those of the NRHP, but focus upon resources of Statewide, rather than national, significance. The CRHR automatically includes resources listed on the NRHP.

Historic Background

This section provides an overview of the historic context of the UCR campus and the potential for historic structures to be located on it. The University of California, Riverside, traces its roots to the University's Citrus Experiment Station, which was initially established at the base of nearby Mount Rubidoux in 1906. The University formed an advisory committee in 1913 to select a site for a unified agricultural experiment station to consolidate research activities then being conducted at scattered experimental farms and laboratories in Tulare, Whittier, Pomona, and Riverside. A site offered by the City of Riverside, comprising almost 370 acres with access to a reliable source of water from the Gage canal, was chosen. Herbert J. Webber, a Professor of Plant Breeding at Cornell University, was

appointed by the Regents of the University of California in 1913 to direct the new Citrus Experiment Station, a post he was to hold until his retirement in 1929. After the acquisition of the 370 acres offered by the City of Riverside, architects Lester H. Hibbard and H.B. Cody were awarded the task of designing the laboratories, offices, and other buildings for the Citrus Experiment Station. The initial complex included the Horticulture Building, now known as the Soils and Plant Nutrition Building (SPN), Irrigation Building (now known as SPN2), the Director's and Superintendent's residences and adjacent Garage/Storage Building, and the Barn. In 1917, most of the operations of the Citrus Experiment Station were moved to the present campus, and the new station was officially dedicated the following year.

In 1948, the Higher Education Survey Committee of the State Legislature recommended that a small liberal arts college be established in proximity to the Citrus Experiment Station. Although the Governor's approval of an appropriations bill came in July of 1949, difficulty in securing funding, compounded by restrictions on construction and procurement of materials during the Korean War, delayed work on the campus. The College of Letters and Science, the first component of the Riverside campus to focus on undergraduate education, opened for enrollment in 1954. By this time, additional lands had been acquired north of the original Citrus Experiment Station (i.e., Canyon Crest Housing [1955], 184 acres; and Watkins House [1956/57], 9 acres), increasing the acreage of the campus. During the period between 1954 and 1964, the campus acquired additional lands south of the Citrus Experiment Station for use as teaching and research fields.

In 1959, The Regents declared Riverside a general campus of the University. Within the next year, the College of Agriculture and the Graduate Division came into being, followed in 1961/62 by the University Extension, the Agricultural Extension, and several new research centers. Since then, both the scope and the size of the campus have expanded greatly, despite a temporary setback in the 1970s and the early 1980s. A series of reorganizations since the 1960s fundamentally transformed UCR and its educational philosophy. Today, with a variety of graduate and professional degrees in the offering and a student body of well over 10,000, UCR bears little resemblance to the small and intimate liberal arts college envisioned for this campus in the 1940s.

Potentially Historic Buildings

Formally Recorded Structures

This section describes the structures on the campus that have been formally documented as historic structures. A total of eight historic-era buildings have been previously identified and formally recorded on the UCR campus. These buildings have been documented in four separate groups, as listed below, but all of them are associated with the history of the Citrus Experiment Station before the establishment of UCR (refer to Figure 4.5-1 [Historic Features on the UCR Campus]). (Note: Eight buildings were initially identified; two are scheduled for demolition.)

- *Citrus Experiment Station (33-8090; CPHI Riv-028).* The three main buildings in the original Citrus Experiment Station complex, have been designated a Point of Historical Interest by the OHP and a Historical Landmark by the County of Riverside. Two of these structures are now fully renovated and renamed Anderson Hall; the third, Chapman Hall, has not been renovated. The

main building of the complex, known historically as the Horticulture Building, and its south wing, known as the Irrigation Building, were designed by architects Lester H. Hibbard and H. B. Cody and constructed in 1916, while the north wing, known as the Soils and Plant Nutrition Building, was designed by G. Stanley Wilson, a prominent local architect, and constructed in 1931 (UCR 1990).

- *The Barn Group (33-7877).* Originally used as barns, stables, storage shed, and/or workshops in support of the Citrus Experiment Station agricultural operations, the three buildings in this group were also designed by Hibbard and Cody and built in 1916 (UCR 1990; Tang 1993a). After the establishment of the College of Letters and Science in 1954, the Barn Group was transformed into a popular extracurricular activities center on the new campus, a function it has served ever since (Tang 1993a).
- *The University Cottage (33-7878).* Constructed in 1917 on yet another Hibbard and Cody design, this building was originally known as the Teamster's Cottage, one of the earliest residences to be erected by the university at the Citrus Experiment Station (UCR 1990; Tang 1993b). Since 1954, it has housed various university offices.
- *The Insectary (33-6015).* This building was designed by G. Stanley Wilson and constructed in 1931 (Thorne 1994). It was altered in 1960, but served its original purpose well into the 1990s (*ibid.*). (Note: This building was evaluated in a historical technical report in 1998 and determined not to be eligible for NRHP listing and is scheduled for demolition.)

All eight of these buildings have been evaluated as potential historical resources, and with the exception of the Insectary, the rest have been determined to be eligible for listing in the National Register of Historic Places or at least historically significant to the UCR community (UCR 1990; Tang 1993a; 1993b; Thorne 1994). The Citrus Experiment Station complex, in fact, was nominated to the National Register in 1989, but the nomination remains uncompleted to date (Lortie 2001).

Potential Resources Identified in 1990

In addition to the formally recorded buildings, the cultural resources overview prepared for the 1990 LRDP identified seven other pre-1945 buildings on campus, along with a WWII-vintage residential complex (LSA 1990), as listed below (see Figure 4.5-1 [Potentially Historic Resources on the UCR Campus] for locations). These structures are identified because they could be historic structures, although none of these, however, have been recorded into any of the official registers or inventories of potential historical resources.

- *The Director's Residence (with Garage and Garden Shed).* The original residence was designed by Lester H. Hibbard and H. B. Cody and built in 1916 (UCR 1990). It is now enlarged significantly, renamed College Building South, and attached to the 1963 College Building North (UCR 2000).
- *The Superintendent's Residence (with Garage).* Like its larger neighbor, the Director's residence, this house was designed by Hibbard and Cody and built in 1916 (UCR 1990).
- *Garage/Storage Building.* This simple utility building is believed to have been built around the same time as the two nearby residences listed above, with which it is "stylistically contemporaneous" (LSA 1990).

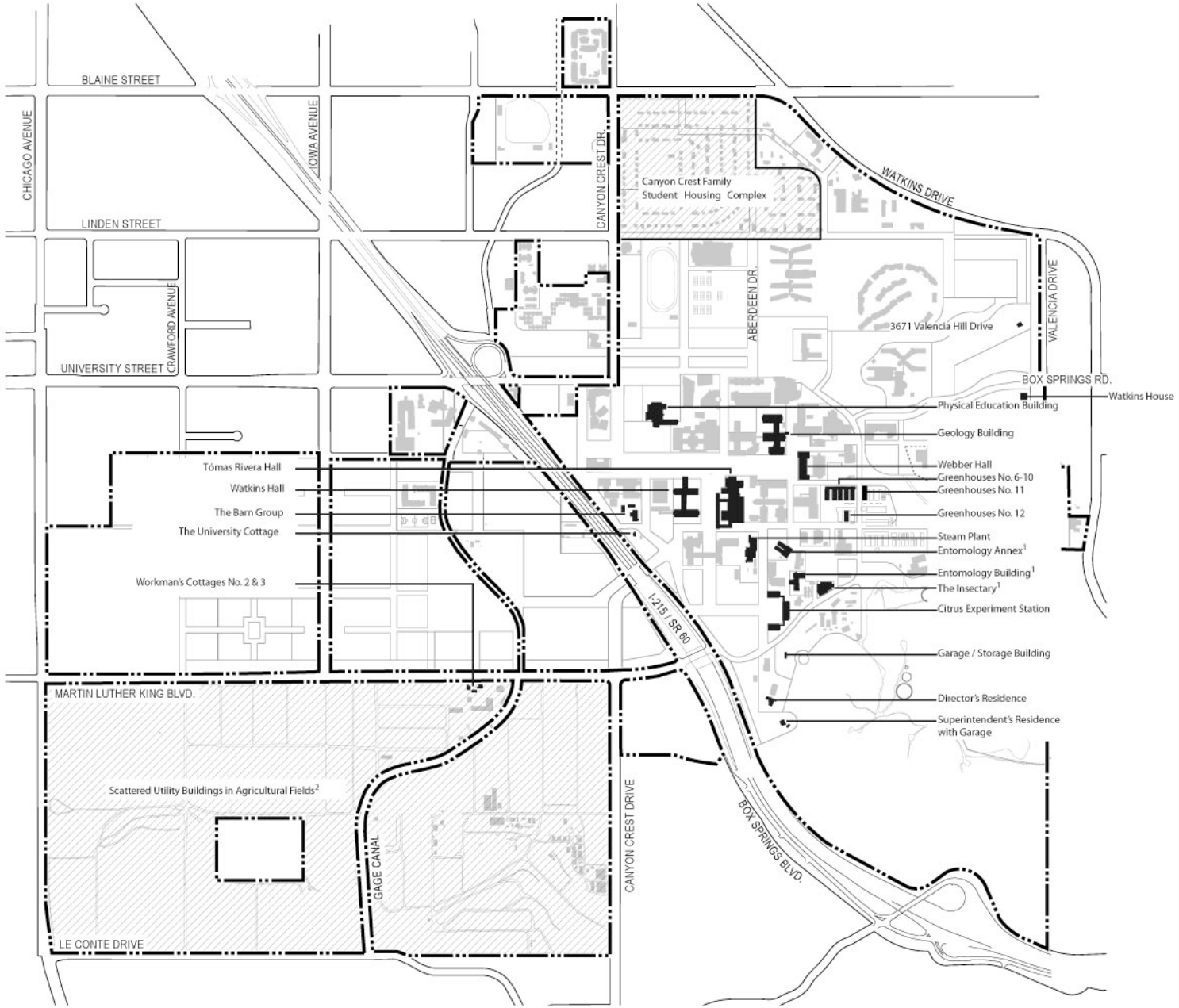

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FIGURE **4.5-1**

Potentially Historic Structures on the UCR Campus

Scale: 1" = 1,400'

Source: UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

- *Entomology Building*. Together with the Soils and Plant Nutrition Building and the Insectary, the Entomology Building represents an early 1930s expansion of the Citrus Experiment Station. Designed by G. Stanley Wilson, this building was completed in 1932 (UCR 1990). In 1948, it was significantly enlarged through an addition, also designed by Wilson (LSA 1990). (Note: This building was evaluated in a historical technical report in 1998 and determined not to be eligible for NRHP listing and is scheduled for demolition.)

In the 1990 cultural resources overview, LSA (1990) also evaluated the *Canyon Crest Family Student Housing Complex*, which contains some 150 residential structures developed by the U.S. military in 1941 and acquired by UCR in 1955, before the construction of the first dormitory on campus (UCR 1958; 2000). Because the buildings are architecturally generic and virtually all have been significantly altered, the LSA analysis concluded that this complex did not meet the eligibility criteria for the National Criteria. In the cultural resources report for the 2005 LRDP, CRM Tech also described these structures as having been substantially modified (2002, p. 10).

Some of the LSA evaluations have since been modified as the result of more focused research on individual buildings, as in the case of the Barn Group and the Insectary (Tang 1993a; Thorne 1994). Therefore, LSA's evaluations on the other buildings, with the exception of Canyon Crest Housing, reached on the basis of an overview study, should be considered preliminary.

Additional Buildings from the Historic Period

During the present study, several more pre-1945 buildings were noted in the planning area, including two residences and at least three utility buildings in the agricultural fields south of Martin Luther King Boulevard. In addition, a number of buildings constructed after 1945 but before 1957 have now become more than 45 years old, thus meeting the age threshold established by the OHP for features of built environment to be considered potentially historic. These buildings are listed below.

- *Workman's Cottages No. 2 and 3 (1080 and 1096 Martin Luther King Boulevard, with Garage)*. Although LSA reports that these buildings date only to 1958, UCR (2000) records reveal that they were built in 1922, with the garage added in 1955, which is consistent to field estimates based on their style and appearance. However, these buildings do not appear in the 1953 USGS map, raising the possibility that they may have been moved to this location between 1953 and 1967 (USGS 1953; 1967).
- *Entomology Annex*. According to UCR records, this building was constructed in 1947 (UCR 2000). (Note: This building was evaluated in a historical technical report in 1998 and has been demolished).
- *Steam Plant*. Built in 1949, the steam plant was considered the first building to be completed on and for the new Riverside campus (Citizens University Committee 1949).
- *Tomás Rivera Library, Watkins Hall, Physical Education Building, Geology Building, and Webber Hall*. All completed before 1954, these five buildings formed the core of the campus of the newly created College of Letters and Science (UCR 1959, 8–10; 2000). Initially, Watkins Hall, Geology Building, and Webber Hall were home to the college's social sciences and humanities, physical sciences, and life sciences divisions, respectively, with Watkins Hall also housing the college

administration offices. The original library building was greatly expanded in 1966, and now constitutes the northern portion of present-day Tomás Rivera Library.

- *Greenhouse Nos. 6–10, 11, 16*. These structures were constructed between 1952 and 1956, and more greenhouses of identical design were added to No. 11 and No. 16 in 1957 (UCR 2000).
- *Agricultural Utility Buildings*. Among the large number of barns, storage sheds, field laboratories, greenhouses, and other utility buildings in the agricultural fields south of Martin Luther King Boulevard, many date to the pre-1957 period, including at least three that were built in 1924 (UCR 2000). These three are identified in the university's facilities inventory as Garages C2, C3, and S5 (*ibid*.).

Although these structures are of sufficient age to be considered potentially historic during the proposed 2005 LRDP planning period, age alone would not necessarily render them historic: if the campus proposes to modify any of these structures, additional analysis would be required to determine whether these structures meet any of the criteria for the NRHP or CRHR, described above under Definitions of Historical Resources. Further, despite their age, structures such as the greenhouses and agricultural buildings as many of these structures are utilitarian, architecturally undistinguished, and very similar to one another. These buildings are unlikely to qualify for NHRP or CRHR listing unless they have exceptional historic associations. Although only an overview study was prepared for the 2005 LRDP, the central assemblage of the original core campus buildings (including the *Tomás Rivera Library, Watkins Hall, Physical Education Building, Geology Building, and Webber Hall)* may meet the eligibility criteria for listing, because the represent the establishment of the UCR campus and embody distinctive characteristics of a type or period of architecture.

In addition, an overview analysis was conducted for the residence at 3671 Valencia Hill Drive (on the UCR campus), and although this structure was built in 1955 (UCR 2000) and thus is more than 50 years old, it does not appear that this structure meets any of the criteria for the NRHP or CRHR, as it is not associated with events that have made a significant contribution to the broad patterns of our history; is not associated with the lives of persons significant in our past; does not embody the distinctive characteristics of a type, period, or method of construction; does not represent the work of a master; does not possess high artistic values, represent a significant and distinguishable entity, or whose components may lack individual distinction, or has yielded, or may be likely to yield, information important in prehistory or history.

4.5.3 Regulatory Framework

The treatment of cultural resources is governed by federal, State, and local laws and guidelines. There are specific criteria for determining whether prehistoric and historic sites or objects are significant and/or protected by law. Federal and State significance criteria generally focus on the resource's integrity and uniqueness, its relationship to similar resources, and its potential to contribute important information to scholarly research. Some resources that do not meet federal significance criteria may be considered significant by State criteria. The laws and regulation seek to mitigate impacts on significant prehistoric or historic resources. The federal, State, and local laws and guidelines for protecting historic resources are summarized below.

Federal

The National Historic Preservation Act of 1966

The National Historic Preservation Act of 1966 established the National Register of Historic Places (NRHP) as the official federal list of cultural resources that have been nominated by State offices for their historical significance at the local, State, or national level. Properties listed in the NRHP, or "determined eligible" for listing, must meet certain criteria for historical significance and possess integrity of form, location, and setting. Significance is determined by four aspects of American history or prehistory recognized by the NRHP Criteria:

(A) Associated with events that have made a significant contribution to the broad patterns of our history

(B) Associated with the lives of persons significant in our past

(C) Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values, represent a significant and distinguishable entity whose components may lack individual distinction

(D) Have yielded, or may be likely to yield, information important in prehistory or history

Eligible properties meet at least one of the criteria and exhibit integrity, measured by the degree to which the resource retains its historical properties and conveys its historical character, the degree to which the original fabric has been retained, and the reversibility of changes to the property.

State

California Register of Historic Resources (P.R.C. Section 5020 *et seq.*)

The State Historic Preservation Office (SHPO) maintains the California Register of Historic Resources (CRHR). Properties listed, or formally designated eligible for listing, on the NRHP are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

California Senate Bill 297 (1982)

This bill addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the Native American Heritage Commission to resolve disputes regarding the disposition of such remains.

4.5.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the 2005 LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects, or the location of those projects. Therefore, this EIR evaluates cultural resource impacts based upon probable location of future development, based on the land use plan included in the 2005 LRDP. By comparing existing land use to proposed future land uses, implementation of the 2005 LRDP is evaluated to determine whether future development would result in a substantial adverse change in the significance of a historical or archaeological resource, would directly or indirectly destroy a unique paleontological resource or site or unique geologic feature, or disturb any human remains, including those interred outside of formal cemeteries.

Because the LRDP does not propose modification or demolition or any specific buildings, the potential for LRDP implementation to adversely affect historic structures was inferred based on the location and assumed intensity of future development. For example, infill development is assumed to occur in selective locations, while redevelopment of a site is assumed to involve removal of all existing structures within that area. Since the 2005 LRDP does not include specific footprints or identify areas of disturbance for new or redeveloped facilities, it was assumed that development of an area (as proposed by the 2005 LRDP) could potentially affect any cultural resources that may be at the surface or below the surface, to the depth that construction activities may result in below grade disturbance.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on cultural resources if it would result in any of the following:

- Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5
- Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

The standards of significance for historical resources are based on Appendix G and Section 15064.5 of the CEQA Guidelines. As currently worded in CEQA Guideline Section 15064.5, historical resources include resources listed in, or determined to be eligible for listing in, the CRHR; resources included in a qualifying local register; and resources that the lead agency determines to meet the criteria for listing in the CRHR. These criteria may apply to any historic built environmental feature, and to historic or prehistoric archaeological sites. Properties or sites that are eligible for inclusion in the CRHR are termed "historical resources." Under the provisions of CEQA Guideline Section 15064.5(a)(3) generally, a lead

agency should find that a property is historically significant if it determines that it meets one or more of the criteria for listing on the CRHR, which extend to any building, structure, feature, or site:

(A) Associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

(B) Associated with lives of persons important in our past

(C) Embody the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values

(D) Have yielded, or may be likely to yield, information important in prehistory or history

With few exceptions, to qualify as a historic resource a property must be at least 50 years old and also must retain physical integrity and integrity to its period of significance. Although not all buildings that are 50 years old or greater qualify as historic resources, any structure older than 50 years has the potential to be considered as an historic resource. To determine which buildings on the UCR campus will be 50 years old by the end of the 2005 LRDP planning horizon (in 2015/16), an inventory of buildings on campus by UC Riverside was prepared, which identified 153 general campus buildings with construction dates of 1966 or earlier, which will be at least 50 years old by the end of the LRDP planning horizon. These buildings are listed in Table 4.5-1, by decade of construction. Buildings constructed after 1966 will not attain 50 years of age during the LRDP planning period and generally would not be eligible for consideration as historic resources under CEQA during the 2005 LRDP planning period, and are not considered in this analysis. Approximately 58 percent of the buildings and structures inventoried were constructed in the 1960s; an additional 19 percent were built during the 1950s. Thus, although all of the inventoried buildings and structures now meet or will meet or exceed the 50-year age criterion for historical significance by 2015, almost 75 percent of these are of post–World War II construction. Many of the older buildings on campus are agricultural facilities (greenhouses or sheds), although there are also a few buildings used for academic programs that pre-date the establishment of UCR. Many buildings on campus, such as greenhouses, lath houses and various sheds, are utilitarian, and are architecturally undistinguished.

Table 4.5-1 UC Riverside Campus Buildings 50 Years of Age or Older by 2016

Constructed between 1960 and 1966			
Agricultural Engineering shops	Agronomy Field Headquarters Building	Bell Tower	Fawcett Lab
Botanical Garden House	Cobalt 60 Building #38	Cold Boxes Roof Building	Boyden Lab
Hinderaker Hall	Custodial & Grounds Building		
Greenhouse 15A-40	Greenhouse 20	Greenhouse 19	
Greenhouse 15A-48	Greenhouse 51	Greenhouse 52	
Greenhouse 15A-41	Greenhouse Plastic 07	Greenhouse 18	Costo Hall
Greenhouse 15A-42	Greenhouse Plastic 06	Health Services	Lathouse 32
Greenhouse 15A-43	Humanities Building	Highlander Hall	Midge Control
Greenhouse Plastic 08	Insectary & Quarantine 44	Lathouse B	Sproul Hall

Table 4.5-1 UC Riverside Campus Buildings 50 Years of Age or Older by 2016			
College Building North	Insectary & Quarantine 39	Lathouse #36	Physics 2000
Meteorology Bldg		Olmsted Hall	Storage Bldg 37
University Commons	Mouradk Lab	Trailer #7 Air Pollution	Storage Bldg 49
Physical Education Utility Bldg	Pierce Hall	Waterspot Rain Chamber	Storage Dock
	Shed Field 11a		
Constructed between 1950 and 1959			
	Storage 6	Theatre Workshop	Warehouse 2
Botany Field House 15a	Greenhouse 06	Greenhouse 07	Agriculture Experiment Station Storage Building
Central Utility Plant	Geology Bldg	Physical Education	Lath 1
Watkins Hall	Webber Hall	Greenhouse 09	Lath Ls
Watkins House	Tractor Shed	Field Laboratory	Farm A
Greenhouse 10	Greenhouse 11		Air Pollution Utility Building
Greenhouse Field 2, Air Pollution	Greenhouse 08	Greenhouse 16	Storage Building Radioactive Materials
Greenhouse Ap F-17	Hinderaker Hall Storage	Plant Drying Bldg	Rubidoux Screenhouse
Greenhouse Ap F-13	Greenhouse 13	Farm B	Greenhouse 12
Greenhouse Ap F-18	Greenhouse 14	Greenhouse 17	Greenhouse 21
Telephone Building	Botany Screenhouse	Lath 4	Lath 8
Corporation Yard A	Life Science	Lath 3	Soil Science Bldg
Corporation Yard B	Spieth Hall	Lathouse Botany	Stored Products Insecticide Building
Corporation Yard C	Corporation Car Shed	Insectary	Verley Barn
Constructed between 1940 and 1949			
Agricultural Operations Shed 9			Entomology Annex
			Greenhouse Plastic 05
Constructed Between 1930 and 1939			
Greenhouse Plastic 01	Storage 3	Chapman Hall	Entomology (Old)
Greenhouse 16 45	Greenhouse 02a	Greenhouse 16 46	Farm E
Greenhouse Plastic 02	Greenhouse Plastic 04	Storage 2	Storage 1
Greenhouse Plastic 16-03	Vegetable Crops Storehouse		
Constructed between 1920 and 1929			
		Pump 2	Garage C1
	Garage C3	Garage Ss	Garage C2
Constructed between 1910 and 1919			
Anderson 2	Barn	Barn Stable	Storage 5
University Cottage	Equipment Shed	Growth Chamber Building	Pump 3
College Building South			

Source: UCR Capital and Physical Planning, July 2003

Archaeological sites may also qualify as historical resources under CEQA Guideline Section 15064.5(a)(3). Archaeological sites most often are assessed relative to CRHR Criterion D (for potential to yield data important to history or prehistory). An archaeological deposit that has been extensively disturbed and archaeological artifacts found in isolation may not be eligible for listing on the CRHR, because the lack of stratigraphic context may impair the ability of the resource to yield significant data. A resource that does not meet one of the criteria for eligibility to the CRHR is not a historical resource under CEQA, and impacts to such a property are not significant.

"Unique archaeological resources" are defined under CEQA through PRC Section 21083.2(g). A unique archaeological resource implies an archaeological artifact, object, or site about which it can be clearly demonstrated that there is a high probability that it meets one of the following criteria:

- The archaeological artifact, object, or site contains information needed to answer important scientific questions and there is a demonstrable public interest in that information
- The archaeological artifact, object, or site has a special and particular quality, such as being the oldest of its type or the best available example of its type
- The archaeological artifact, object, or site is directly associated with a scientifically recognized important prehistoric or historic event or person

For a resource to qualify as a unique archaeological resource, the agency must determine that there is a high probability that the resource meets one of these criteria without merely adding to the current body of knowledge (PRC Section 21083.2(g)). An archaeological artifact, object, or site that does not meet the above criteria is a nonunique archaeological resource (PRC Section 21083.2(h)).

An impact on a nonunique resource is not a significant environmental impact under CEQA (CEQA Guideline Section 15064.5(c)(4)). If an archaeological resource qualifies as a historical resource under CRHR criteria, then the resource is treated as a historical resource for the purposes of CEQA.

Section 15064.5 of the CEQA Guidelines assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. These procedures are detailed under PRC Section 5097.98.

Effects Not Found to Be Significant

The Initial Study did not identify any effects not found to be significant related to cultural resources; therefore, all potential cultural resource impacts are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project cause a substantial adverse change in the significance of a historical resource as defined in the CEQA Guidelines Section 15064.5?

Impact 4.5-1 **Implementation of the 2005 LRDP could result in the modification of structures that have been designated as eligible or potentially eligible to the NRHP or CRHR. With**

implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.

Implementation of the 2005 LRDP would result in the development of new academic buildings and support facilities that would convert undeveloped open space and agricultural teaching and research fields into the site of new buildings and facilities and replace existing structures. As described above, several structures on the East Campus and West Campus have been identified as historic or potentially historic, and the development of new structures and facilities could result in a substantial adverse change in the significance of these historical resources on the UCR campus.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including one relevant to preservation of historic resources:

PS Conservation 4 *Preserve historic buildings to the extent feasible.*

This Planning Strategy would reduce, but not eliminate potential modifications to historic resources that could result in a substantial adverse change in the significance of those historical resources.

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the academic core on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills Residence Halls complex, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation, parking, support and open space on the West Campus (north of Martin Luther King Boulevard). However, none of this proposed development would specifically involve the modification of any potentially historic structures.

As described above in Section 4.5.2 (Existing Conditions), a total of eight historic-era buildings on campus are eligible or potentially eligible for listing on the NRHP and/or CRHR and, therefore, meet the definition of historical resources under Section 15064.5(a) of the CEQA Guidelines, including the Citrus Experiment Station, the Barn Group, University Cottage, Director's Residence (with Garage and Garden Shed), and the Superintendent's Residence and adjacent Garage/Storage Building. In addition, other buildings constructed before 1957 are now more than 45 years old and would meet OHP's age threshold for structures to be considered potentially historic, including Workman's Cottages No. 2 and 3, Steam Plant, Greenhouse Nos. 6–10, 11, 16, Garages C2, C3, and S5, and the original assemblage of buildings around the Carillon Mall, including the Tomás Rivera Library, Watkins Hall, Physical Education Building, Geology Building, and Webber Hall. In addition, other buildings that may be 50 years old or greater by 2016, and thus warrant consideration as potentially historic resources, are listed in Table 4.5-1 above.

During the planning horizon of the 2005 LRDP, seismic, life safety or utility system retrofits or upgrades could result in modification of potentially historic structures. These modifications could adversely affect

the historical significance of a structure by altering the character or setting of the structure. Changes to the character-defining features of the structure could result in substantial adverse changes to the significance of a historical resource. Thus, even with implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP could result in the modification of structures or resources identified as potentially historic by the campus.

Implementation of MM 4.5-1(a) would ensure that structures that could qualify as historic would be identified prior to modification, and MM 4.5-1(b) would require that any modification to a historic structure be undertaken in compliance with the Secretary of the Interior's S*tandards for Treatment of Historic Properties* or the State Historical Building Code, as appropriate. Modifications to historic structures would therefore be implemented in a manner that is sensitive to the character and setting of an historic resource and the qualities of the structure that convey historic significance.

MM 4.5-1(a) *Before altering or otherwise affecting a building or structure 50 years old or older, the campus shall retain a qualified architectural historian to evaluate the potential significance of the building, using the significance criteria set forth for historic resources under CEQA Guidelines Section 15064.5. The evaluation process shall include the development of appropriate historical background research as context for the assessment of the significance of the structure in the history of the University system, the campus, and the region. For historic buildings, structures, or features that do not meet the CEQA criteria for historical resource, no further mitigation is required and the impact is less than significant.*

MM 4.5-1(b) *The University shall follow the Secretary of the Interior's Standards for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings (Weeks and Grimmer 1995) or the State Historical Building Code, as appropriate when making modifications to historic structures eligible for NRHP or CRHR listing.*

With implementation of MM 4.5-1(a) and (b), implementation of the 2005 LRDP would not result in modification of structures that have been designated as eligible to the NRHP or CRHR in a manner that would result a substantial adverse change in the significance of a historical resource as defined in the CEQA Guidelines Section 15064.5, and this impact would be *less than significant*.

Impact 4.5-2 **Implementation of the 2005 LRDP could result in the demolition of historic or potentially historic structures. With implementation of relevant 2005 LRDP Planning Strategies, Program and Practice, and Mitigation Measures, this impact could remain *significant and unavoidable*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus. On the East Campus, this would include infill development in the academic core, expansion of the academic core, new housing and redevelopment of the Canyon Crest Family Student Housing and Bannockburn Village sites, new recreational facilities, new

parking and preservation of open space. On the West Campus, new academic, housing, recreation, support, and open space would be developed in the area north of Martin Luther King Boulevard.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including *Conservation 4*, described under Impact 4.5-1 above, and the following other relevant strategies:

PS Conservation 4	*Preserve historic buildings to the extent feasible.*
PS Land Use 3	*Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*
PS Open Space 5	*Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*

In addition, continued implementation of existing campus Programs and Practices would also require project-specific CEQA review of projects relocating or demolishing historic resources.

PP 4.5-2	*If any project is proposed that would require or result in the relocation or demolition of a historic structure, the campus shall prepare a project-specific CEQA analysis, pursuant to Section 15064.5 et seq. of the CEQA Guidelines.*

By requiring a project-specific CEQA analysis, any potential impacts to historic structures associated with their relocation or demolition would need to be assessed and where potential adverse effects to these structures are determined, feasible mitigation measures would be implemented to reduce these effects.

Of the various land uses proposed in the 2005 LRDP, historic or potentially historic structures on the UCR campus could be affected by infill development within the academic core of the East Campus. Historic structures in this area include the Citrus Experiment Station, the Barn Group, University Cottage, Director's Residence (with Garage and Garden Shed), and the Superintendent's Residence and adjacent Garage/Storage Building. In addition, pending additional study, the following buildings would be considered potentially historic because they are more than 45 years old, including the Steam Plant, Greenhouse Nos. 6–10, 11, 16, and the original assemblage of buildings around the Carillon Mall, including Tomás Rivera Library, Watkins Hall, Physical Education Building, Geology Building, and Webber Hall, form the historic core of the campus. In addition, other buildings that may be 50 years old or greater, and thus warrant consideration as potentially historic resources, are listed in Table 4.5-1 above.

Any proposal to demolish the listed structures during the LRDP planning horizon would require additional study to determine the historical significance of the structure based on the criteria set forth for the NRHP and CRHR and listed in Section 15064.5(a)(3) of the CEQA Guidelines. Criteria that would be most likely to apply to these structures include association with events that have made significant contributions to California history (such as development of the University), association with lives of persons important in the past (such as influential educators or researchers), or embodiment of distinctive

characteristics of a type, period, region, method of construction, or important creative individual (such as a renowned architect).

Development of new housing and recreation east of the Pentland Hills and Lothian Residence Halls could result in the demolition or relocation of the residence at 3671 Valencia Hill Drive, which was built in 1955. However, as noted in Section 4.5.2 (Existing Conditions), it does not appear that this structure meets the criteria for the NRHP or CRHR. As noted in the setting, because of the significant extent of modification to the structures associated with the redevelopment of the Canyon Crest Family Student Housing complex, these structures do not meet the listing criteria for the NHRP or CRHR. No historic or potentially historic structures are located on the West Campus in the area north of Martin Luther King, and no development is proposed to occur south of Martin Luther King Boulevard. Therefore the 2005 LRDP would not affect any historic or potentially historic structures on the West Campus.

Implementation of 2005 LRDP Planning Strategies *Land Use 3*, *Open Space 5,* and *Conservation 4*, described above under Impact 4.5-1, would reduce potential adverse impacts to historic resources. Although the 2005 LRDP does not propose demolition of any individual buildings that are considered historic or potentially historic, the 2005 LRDP does not preclude demolition of historic buildings, and therefore as a conservative assumption, the 2005 LRDP could result in a substantial adverse change in the significance of a historical resource as defined in the CEQA Guidelines, Section 15064.5, through demolition of such a structure.

To reduce potential impacts from demolition of historic resources, MM 4.5-1(a), above, would require an evaluation of any building that is greater than 50 years old to determine whether the building meets the criteria for listing on the NHRP or CRHR and therefore would be considered a historic resource. If any historic building is proposed to be demolished, MM 4.5-2 would require documentation of the historic structure prior to demolition.

MM 4.5-2 *For any proposal to demolish a structure or building that has been determined by a qualified architectural historian to qualify as an historical resource and where it has been determined that avoidance is not feasible, documentation and treatment shall be carried out as described below:*

(i) If preservation and reuse at the site are not feasible, the historical building shall be documented as described in item (ii) and, when physically and financially feasible, be moved and preserved or reused.

(ii) If a significant historic building or structure is proposed to be demolished, the campus shall ensure that a qualified architectural historian thoroughly documents the building and associated landscaping and setting. Documentation shall include still and video photography and a written documentary record of the building to the standards of the Historic American Building Survey (HABS) or Historic American Engineering Record (HAER), including accurate scaled mapping, architectural descriptions, and scaled architectural plans, if available. A copy of the record shall be deposited with

the University archives, Rivera Library Special Collections. The record shall be accompanied by a report containing site-specific history and appropriate contextual information. This information shall be gathered through site specific and comparative archival research, and oral history collection as appropriate.

With implementation of MM 4.5-1(a) and (b) and MM 4.5-2 this impact would be reduced, as some information important in history would be preserved regarding any historic structure that could be demolished; however, the demolition of a historic structure cannot be mitigated to a less-than-significant level as demolition irrevocably reduces the historic significance of the resource, as defined in Section 15064.5 of the CEQA Guidelines, particularly when the significance of the resource bears upon a physical feature that cannot be restored. Consequently, implementation of the 2005 LRDP could result in a ***significant, unavoidable*** impact to historic structures.

Threshold	Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to the CEQA Guidelines Section 15064.5?

Impact 4.5-3 **Construction activities associated with implementation of the 2005 LRDP could result in damage to or the destruction of previously unknown archaeological resources. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new academic buildings and support facilities that would convert undeveloped open space and agricultural teaching and research fields into the site of new buildings and facilities and replace existing structures. Ground disturbing activities, such as grading or excavation, could affect known or unknown archaeological resources.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies would minimize the area of the campus subject to disturbance, or reduce disturbance at individual sites:

PS Land Use 2 *In order to achieve 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 Land Use 3 *Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*

PS Open Space 1 *Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*

PS Open Space 2 — *Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration.*

PS Open Space 3 — *In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.*

PS Open Space 5 — *Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*

PS 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.*

PS Conservation 2 — *Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.*

PS Conservation 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.*

In addition, continued implementation of existing campus Programs and Practices would also require the preparation of site-specific analysis and provisional measures in the event that archeological resources are identified.

PP 4.5-3 — *If construction would occur within the southeast hills or within the portion of the West Campus north of Martin Luther King Boulevard, a surface field survey shall be conducted in conjunction with a project specific environmental analysis in accordance with CEQA. Depending on the results of the survey, the following measures shall be implemented:*

(i) If no evidence of surface archaeological resources is discovered, or if development would occur in areas not designated as sensitive for archaeological resources:

- *Prior to site preparation or grading activities, construction personnel shall be informed of the potential for encountering unique archaeological resources and taught how to identify these resources if encountered. This shall include the provision of written materials to familiarize personnel with the range of resources that might be expected, the type of activities that may result in impacts, and the legal framework of cultural resources protection. Construction specifications shall require that all construction personnel shall be instructed to stop work in the vicinity of a potential*

discovery until a qualified, non-University archaeologist assesses the significance of the find and implements appropriate measures to protect or scientifically remove the find. Construction personnel shall also be informed that unauthorized collection of archaeological resources is prohibited.

- *The campus shall require the site project contractor to report any evidence of archaeological resources unearthed during development excavation to the campus.*
- *The archaeologist shall then be present during the grading and shall have the authority to halt disturbance of any archaeological resources long enough to assess the situation, conduct testing, and implement mitigation measures that would reduce impacts in accordance with Section 21083.2 of CEQA.*

(ii) If any evidence of archaeological materials is discovered on the surface during field survey, then:

- *A qualified archaeologist shall prepare a recovery plan for the resources.*
- *An archaeologist shall also be present during grading and shall have the authority to halt disturbance of any archaeological resources long enough to assess the situation, conduct testing, and implement mitigation measures that would reduce impacts in accordance with Section 21083.2 of CEQA.*

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills Residence Halls complex, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking facilities at locations around the perimeter of the Campus, and development of new academic, housing, recreation, parking, and open space on the West Campus (north of Martin Luther King Boulevard).

Several recorded archaeological sites are located on UCR campus. Site CA-RIV-495 consists of a single grinding slick on a bedrock outcrop, located on a slope in the southeast hills. Site CA-RIV-4768H, the historic Gage Canal, traverses the West Campus. In addition, the recent discovery of a previously undocumented boulder with two grinding slicks near Site CA-RIV-495 suggests that more prehistoric bedrock milling features may have yet to be recorded in the rolling hills in the southeastern portion of the campus. Remnants from historic human activities have been encountered in the agricultural teaching and research fields south of Martin Luther King Boulevard, which date approximately to or prior to the early years of the Citrus Experiment Station. The possibility exists that more undisturbed historic-era archaeological remains may have yet to be detected in that area.

Per LRDP Planning Strategies *Open Space 2* and *Open Space 3*, development within the southeast hills would be limited to sensitively sited utility projects, envisioned to include an additional water storage tank. Per LRDP Planning Strategy *Land Use 3*, the agricultural and teaching fields south of Martin Luther

King Boulevard would be preserved, and no development is assumed to occur in this area. Thus, the areas with the highest archaeological sensitivity would have limited development potential under the 2005 LRDP.

The academic core on the East Campus and areas immediately adjacent to the academic core (except for the southeast hills) have been disturbed by previous construction activities and therefore present a low potential for encountering unknown, intact, archaeological resources.

Development of the West Campus would occur north of Martin Luther King Boulevard (with exception of the Campus Reserve at the corner of Chicago Avenue and Martin Luther King Boulevard), which would result in the conversion of agricultural teaching and research fields to the site of academic buildings and support facilities. The 2005 LRDP also proposes to preserve the linear corridor of the Gage Canal, north of Martin Luther King Boulevard, into a pedestrian/bicycle open space, although the canal will be covered (to assure public safety and maintain water quality). The canal is planned to remain intact, and would remain uncovered south of Martin Luther King, where it would remain within its current context as agricultural water supply canal surrounded by agricultural land.

Development of new buildings and facilities involving excavation activities (for building foundations, utility improvements, etc.) could result in potential damage or destruction of unknown archaeological resources. Implementation of existing campus Program and Practice 4.5-3 would require field survey prior to development on the West Campus north of Martin Luther King Boulevard and within the southeast hills. This would ensure protection or treatment of archaeological resources, as appropriate, pursuant to Section 21083.2 of CEQA, and ensure that any important scientific information that could be provided by these resources regarding history or prehistory is not lost.

With implementation of the identified LRDP Planning Strategies and continued implementation of existing campus Program and Practice, implementation of the 2005 LRDP would not cause a substantial adverse change in the significance of an archaeological resource pursuant to the CEQA Guidelines Section 15064.5, and this impact would be *less than significant*.

Threshold	Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Impact 4.5-4 **Construction activities associated with implementation of the 2005 LRDP could result in damage to or the destruction of previously unknown paleontological resources. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new academic buildings and support facilities that would convert undeveloped open space and agricultural teaching and research fields into the site of new buildings and facilities and replace existing structures. As noted in the setting, paleontological resources are not anticipated to be located on the campus, as the campus is not in an area

of paleontological sensitivity. However, ground disturbing activities could affect unknown paleontological resources.

The implementation of Planning Strategies *Land Use 3*, *Open Space 1*, and *Open Space 5*, described above under Impact 4.5-3, would limit the areas of the campus that would be subject to development. Per LRDP Planning Strategy *Open Space 2*, development in the southeast hills would be limited to sensitively sited utility projects (e.g. an additional water storage tank). These strategies would limit the already low likelihood for encountering paleontological resources, particularly in those areas of the campus that are in relatively undisturbed condition.

As described above, in Section 4.5.2 (Existing Conditions), the rock and sediment types that underlie the campus are unlikely to be fossil-bearing. Although the likelihood of encountering paleontological resources is low, the potential for discovery of previously unknown paleontological resources cannot be eliminated. Even with implementation of the identified Planning Strategies, implementation of the 2005 LRDP could result in potential damages to or the destruction of previously unknown paleontological resources during construction. Earth-disturbing activities—such as grading and excavation—that could occur on the project site could damage or destroy paleontological resources, if they exist. These resources have the potential to yield additional information important in prehistory. Implementation of PP 4.5-4 would require the preparation of site-specific analysis and provisional measures in the event that paleontological resources are uncovered during construction activities.

PP 4.5-4 *Construction specifications shall require that if a paleontological resource is uncovered during construction activities:*

(i) A qualified paleontologist shall determine the significance of the find.

(ii) The campus shall make an effort to preserve the find intact through feasible project design measures.

(iii) If it cannot be preserved intact, then the University shall retain a qualified non-University paleontologist to design and implement a treatment plan to document and evaluate the data and/or preserve appropriate scientific samples.

(iv) The paleontologist shall prepare a report of the results of the study, following accepted professional practice.

(v) Copies of the report shall be submitted to the University and the Riverside County Museum.

With implementation of MM 4.5-4, this impact would be reduced to a *less-than-significant* level, and implementation of the 2005 LRDP would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Threshold	Would the project disturb any human remains, including those interred outside of formal cemeteries?

Impact 4.5-5 **Construction activities associated with implementation of the 2005 LRDP could result in the disturbance of human remains. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new academic buildings and support facilities that would convert undeveloped open space and agricultural teaching and research fields into the site of new buildings and facilities and replace existing structures. As described above, archaeological resources are located on the campus, and the areas around the campus are of archeological sensitivity. Ground disturbing activities could affect unknown buried human remains.

Implementation of Planning Strategies *Land Use 3*, *Open Space 1*, and *Open Space 5*, described above under Impact 4.5-3, would limit the areas of the campus that would be subject to development. Per LRDP Planning Strategy *Open Space 2*, development in the southeast hills would be limited to sensitively sited utility projects. In addition, implementation of LRDP Planning Strategies *Conservation 1* and *Conservation 2*, described above under Impact 4.5-3, site disturbance would also be minimized. These strategies would limit the potential to encounter human remains, particularly in those areas of the campus that are in relatively undisturbed condition.

Human burials, in addition to being potential archaeological resources, have specific provisions for treatment in Section 5097 of the California Public Resources Code. In accordance with these requirements, PP 4.5-5 requires implementation of the following measure if human remains are discovered on-campus:

PP 4.5-5 *In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected and the University immediately shall notify the Riverside County Coroner of the find and comply with the provisions of P.R.C. Section 5097 with respect to Native American involvement, burial treatment, and re-burial, if necessary.*

No formal cemeteries are known to have occupied the UCR campus, so any human remains encountered would likely come from archaeological or historical archaeological contexts. As described above in Section 4.5.2 (Existing Conditions), aside from Site CA-RIV-495 and Site CA-RIV-4768H, the discovery of a previously undocumented boulder with two grinding slicks near Site CA-RIV-495 suggests that more prehistoric bedrock milling features may have yet to be recorded in the southeast hills on the East Campus. Development in this area would be limited, which would reduce the potential for discovery of human remains in this area.

With implementation of the identified LRDP Planning Strategies and continued implementation of the existing campus Program and Practice, implementation of the 2005 LRDP would not disturb any human remains, including those interred outside of formal cemeteries, and this impact would be *less than significant*.

4.5.5 Cumulative Impacts

The geographic context for the analysis of cumulative cultural resources impacts includes the City of Riverside. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the City of Riverside General Plan and development of the off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis).

Related projects within the City of Riverside could result in the adverse modification or destruction of historic buildings, which could contribute to the erosion of the historic and architectural fabric of the City. However, it is anticipated that future development in the City of Riverside that could potentially affect historic resources or structures will be subject to the requirements of CEQA and City of Riverside historic resource protection ordinances. It is further anticipated that the effects of related projects on historic resources will be mitigated to the extent feasible in accordance with CEQA and other applicable legal requirements.

Although no specific projects are proposed that would demolish historic structures, implementation of the 2005 LRDP would include increases in core campus density that could result in the demolition of historic or potentially historic structures. Implementation of PP 4.5-2, described above under Impact 4.5-2, would require project-specific CEQA analysis, pursuant to Section 15064.5 *et seq.* of the CEQA Guidelines, for any project that could require or result in demolition of a historic or potentially historic structure. In addition, modification of historic structures on campus would continue to comply with the Secretary of the Interior's standards and guidelines (as defined in Weeks and Grimmer 1995) or the State Historic Building Code, as required by campus MM 4.5-1 described above under Impact 4.5-1. On-campus historical resources are distinct in nature from other historical resources that may be found off-campus, so impacts would not compound or increase one another in a manner that could result in significant cumulative impacts. Therefore, while individual projects may result in significant impacts due to the loss of historic resources, this is not considered to be a significant cumulative impact. The project would not have a cumulatively considerable contribution to this effect.

Development in the Riverside area would require grading and excavation that could potentially affect archaeological or paleontological resources or human remains. The cumulative effect of these projects would contribute to the continued loss of subsurface cultural resources, if these resources are not protected upon discovery. CEQA requirements for protecting archaeological and paleontological resources and human remains are applicable to development in the City of Riverside, as are local cultural resource protection ordinances. Thus, if subsurface cultural resources are protected upon discovery as required by law, impacts to those resources would not be cumulatively considerable. As indicated above, the potential of encountering paleontological or archaeological deposits or human remains on the campus exists. As described above, 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation

Measures would ensure that these project-specific impacts would be less than significant. Similar protective measures would be required for all projects as conditions of approval, depending on the sensitivity of the area subject to ground disturbance. These measures would ensure that impacts on archaeological and paleontological resources would not be cumulatively considerable. Therefore, the contribution of potential impacts from campus development to the cumulative destruction of subsurface cultural resources throughout Riverside would not be cumulatively considerable.

4.5.6 References

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Wood, Rob. 2003. Letter from the State of California, Native American Heritage Commission, to EIP Associates, regarding a Proposed Project University of California, Riverside, Riverside County, 12 March.

4.6 GEOLOGY AND SOILS

4.6.1 Introduction

This section of the EIR describes the existing geology and soils conditions at the UCR campus and analyzes the potential for implementation of the 2005 LRDP to expose people or structures to risk of loss, injury, or death involving rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, including liquefaction or landslides, to result in substantial soil erosion or the loss of topsoil, or result in development on a geologic unit or soil that is unstable, including expansive soils.

The information in this section is based upon the Geology, Soils, and Seismicity section in the 1990 LRDP Final EIR and a site-specific geotechnical report prepared by CHJ, which is included as Appendix F. Information on maximum credible earthquakes is based on a technical appendix to the Draft Environmental Impact Report prepared for the General Plan Update for Riverside County. Bibliographic entries for reference materials appear in Section 4.6.6 (References) of this section.

No comment letters related to geology and soils were written in response to the Notice of Preparation circulated for the project. At the public scoping meeting held on January 8, 2002, concern was expressed that implementation of the 2005 LRDP could result in the destruction of natural land formations. The Notice of Preparation, those comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.6.2 Existing Conditions

Regional Geology

The UCR campus is located in the Perris Block region of the Peninsular Ranges geomorphic province, which is characterized by northwest-trending mountains separated by northwest-trending faults. On a regional scale, the campus is sited in the western portion of Riverside County, an area that is surrounded by the Santa Ana Mountains on the west, San Bernardino Mountains on the north and northeast, and the San Jacinto Mountains on the east. Alluvial deposits weathered and eroded from these mountains make up most of the geologic components of the area.

The San Jacinto and Santa Ana Mountains consist mainly of Mesozoic metamorphic and volcanic rocks, Cretaceous plutonic rocks, and Mesozoic to Cenozoic sediments. Major geological faults that exist at the bases of these mountain ranges include the Elsinore, Whittier, Chino, and San Jacinto faults. The main constituents of the San Bernardino Mountains are also Mesozoic and Cretaceous rocks. The San Andreas Fault lies at the southern base of the San Bernardino Mountains and turns northwest and into the Cajon Pass.

Intrusive rocks from the Southern California batholith, which is defined as a great mass of igneous rock that for the most part stopped rising a considerable distance below the surface, help comprise the Box

Springs Mountains immediately east of the campus. The Quaternary-aged alluvial fill currently beneath the Riverside area is generated by erosion of this batholith.

Local Geology

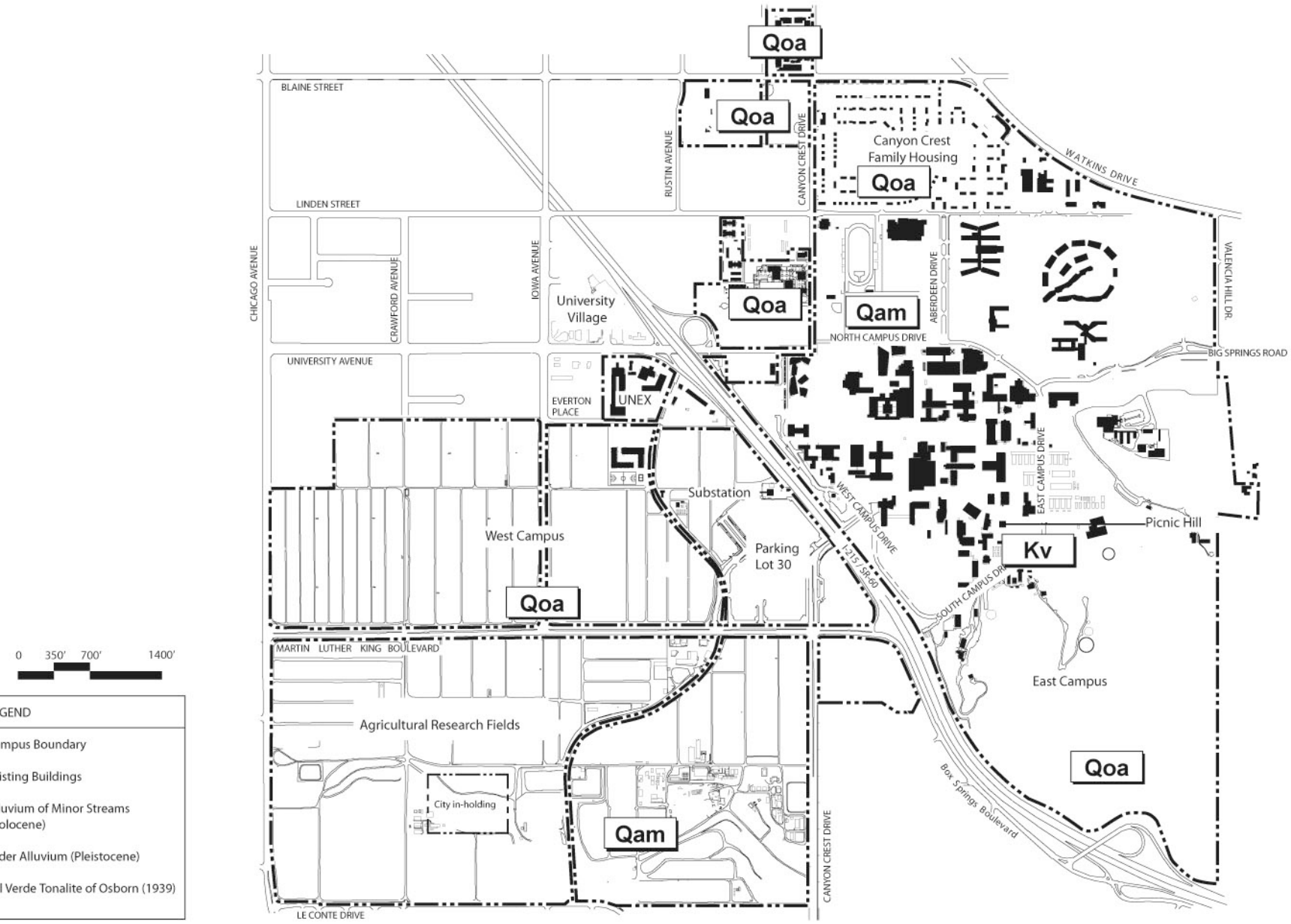
Situated in the lowest topographical portion of the Perris Block, the campus is located on a sloping alluvial apron that rises from the valley plain into the Box Spring Mountains on the east. Elevations at the campus range from 1,000 feet to 1,400 feet above sea level. The surface of most of the campus represents the valley floor as it existed during the late Pleistocene epoch (greater than 11,000 years ago), which has been incised by two active washes, the University Arroyo (or wash) and the Box Springs Arroyo, during Holocene time (the last 11,000 years) and resulted in the current landform of the campus. The geologic materials that underlie the campus include granitic bedrock that is part of the Val Verde tonalite, older alluvium (deposited during the Pleistocene), and younger alluvium (deposited during the Holocene). Figure 4.6-1 shows the general location of these geologic materials on the campus. Refer to Appendix F, Enclosure 4 for further detail.

The Box Springs Mountains located east of the campus are composed mainly of Cretaceous-age granitic rock from the Southern California batholith. Consistent with this geologic setting, exposed bouldery outcrops of granite occur on relatively steep hillsides located on the southeast portion of the campus, southeast of East Campus Drive. Additional bedrock is also exposed on a low hill known as Picnic Hill, which is located west of East Campus Drive and south of Eucalyptus Drive.

Most of the UCR campus is underlain predominantly by older alluvium consisting of sands and silty sands, along with moderate amounts of clay in the upper 2 to 5 feet of the soil. In-situ weathering and the formation of an argillic soil profile associated with granitic rocks have given rise to the clay content, which in turn helped to impart a reddish-brown color to the alluvial deposits. Younger alluvium and fill are found in and around the channels of the University Arroyo and Box Springs Arroyo, which have incised the elevated geomorphic surface. Because portions of the UCR campus have been subject to grading operations associated with the construction activities, fill materials are located at various locations on campus, particularly in the areas east of the freeway.

Faulting

The intersection of the North American tectonic plate and the Pacific tectonic plate is represented by a surface expression known as the San Andreas Fault zone. Seismic activity occurring at the boundaries of these two tectonic plates results from the general northwest motion of the Pacific Plate, which also exerts stress on faults found in the region that are believed to be related to the San Andreas system, including the San Jacinto Fault zone and the Elsinore Fault zone. The strain from local compression or extension from motion along this tectonic boundary is accommodated by numerous other faults related to or found close to the San Andreas Fault zone, as shown in Figure 4.6-2.



See Appendix F, Enclousre 4 for further detail on soils

FIGURE **4.6-1**

Generalized Map of Soils on the UCR Campus

Scale: 1" = 1,400'

10537-00

Source: Geology Technical Appendix, Appendix F

UC Riverside

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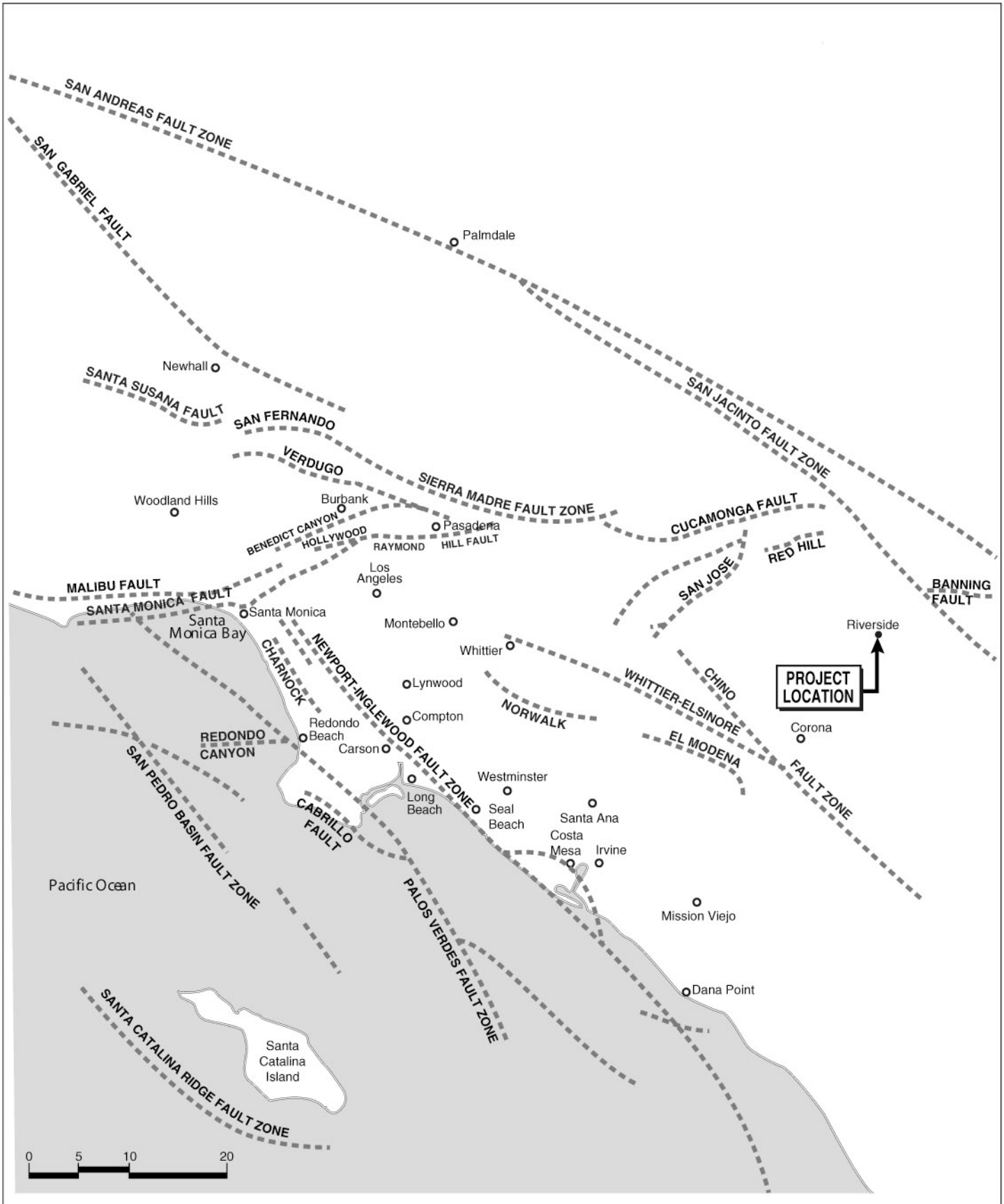

FIGURE **4.6-2**

Regional Fault Map

Scale In Miles

10537-00

Source: CDMG OFR 92-03 (1992), USGS MFI-512 (1965)

UC Riverside

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Based on criteria established by the California Division of Mines and Geology (CDMG), faults may be categorized as active, potentially active, or inactive. Active faults are those that show evidence of surface displacement during the Holocene epoch, which is within the last 11,000 years. Potentially active faults are those that show evidence of last displacement during the Quaternary epoch, which is within the last 1.6 million years. Faults showing no evidence of displacement within the last 1.6 million years may be considered inactive for most purposes, except for some critical structures.

The closest known active fault to the campus is the San Jacinto Fault, located approximately 6 miles to the northeast. Due to the frequent occurrence of large earthquakes on this fault, the San Jacinto Fault zone poses the greatest risk to the campus in terms of seismic hazards related to ground shaking. About 10 miles to the northeast of the campus is the Banning Fault Zone that interacts with the San Andreas Fault zone. The San Andreas Fault zone, located approximately 14 miles northeast of the campus, runs along the southwest edge of the San Bernardino Mountains and its active trace is demarcated at the base of the mountain front. The Whittier-Elsinore Fault Zone is located 18 miles southwest of the campus and consists of multiple and diverging fault traces that ultimately extend north into the Whittier and Chino faults.

There is no evidence of any known active or potentially active faults on or immediately adjacent to the UCR campus. One inactive fault, known as the Box Springs Fault, is buried underneath Pleistocene-age alluvium near the northeast corner of the campus. This fault is associated with springs found along the southwest margin of the Box Springs Mountains.

Historically, the earthquakes that have occurred in the region have mostly resulted from the San Jacinto Fault. Considered the most seismically active fault in southern California, this fault has given rise to seven earthquakes of 6.0 or greater Richter[13] magnitude between 1899 and 1990. The San Andreas Fault produced a major seismic event in the 1857 Fort Tejon earthquake that caused surface rupture in its Mojave segment. Two other major earthquakes generated by the Coachella Valley segment of this fault have been recorded and include the 1948 earthquake in the Desert Hot Springs area, which registered at 6.5 Richter magnitude, and the 1986 earthquake in the North Palm Springs area, which registered at 5.6 Richter magnitude. The only large historic seismic event inferred by scientists to have occurred on the San Bernardino Mountains segment of the San Andreas Fault occurred on December 8, 1812 and ruptured the northern reaches of this segment. The Elsinore fault has been attributed for producing the 1910 earthquake in the Temescal Valley area that registered at 6.0 Richter magnitude.

Each of the major fault zone systems near the campus is capable of producing large earthquakes, with a maximum credible earthquake[14] estimated as a magnitude 7.3 event on the San Bernardino segment of the San Andreas Fault, a 6.9 event on the San Jacinto Valley segments of San Jacinto Fault, and a 6.7 to

[13] A magnitude scale used to express the seismic energy released by an earthquake, often referred to as intensity, first developed by Dr. Charles F. Richter.

[14] Maximum Credible Earthquake is the largest earthquake (measured in magnitude on the Richter Scale) that appears to be reasonably capable of occurring under the presently known geologic framework.

6.8 event on the segments of the Elsinore Fault. Any of these would result in severe earthshaking on the campus, although no surface rupture is likely.

Soils

Two broad groups of soil associations, or types, are found in the vicinity of the campus. The Cieneba-Rockland-Fallbrook association comprises the steeper bedrock areas that are found on the southeast portion of the campus, while the Monserate-Arlington-Exeter association comprises the flatter alluvial areas, and hence, the majority of the campus. The soils are also further classified by series, which are designated based on a type locality in California. The steeper bedrock areas of the campus include the Cieneba and Vista series, which are characterized as being minimally developed and relatively thin soils that are severely limited for agricultural uses. The flatter alluvial areas include the Arlington, Buren, Hanford, Madera, and Monserate series, which are derived entirely or mostly from the erosion of granite rocks.

The Arlington and Hanford soils comprise most of the relatively flat-sloped West Campus. These soils consist of silty fine to coarse sands, with deeper layers of silt and relatively clean sand. Having a low shrink-swell characteristic, the upper layers are well drained and have either weakly cemented alluvium or deeper loams located 18 to 37 inches below them. The relatively thin and moderately developed Hanford soils have more consolidated material located 40 to 60 inches below the surface while extensive hardpan areas of cemented alluvium occur from 21 to 54 inches below the surface. The Arlington soils, on the other hand, are better developed, thicker, and have an argillic horizon. Erosion hazards for these soils range from slight to moderate.

The soil series on the East Campus include the Arlington, Hanford, Buren, and Monserate series. With slightly higher slopes, these soils have more consolidated alluvial materials below the upper surface layers but also a relatively high erosion hazard. The Buren series has a moderate to low shrink-swell potential and is relatively thick and well developed, with an argillic horizon and a hardpan layer. Similarly, the Monserate series is also relatively thick and well developed, with an argillic horizon and an iron and silica cemented hardpan layer about 28 to 45 inches below the surface. Comprising most of the northeastern part of the campus, the Monserate soils are well drained and consist of sandy loams over sandy clay loams. The erosion hazard for this type of soil ranges from slight to moderate and the shrink-swell potential is from low to moderate. The soil beneath the intramural fields located on this part of campus consists of uncompacted fill material, with the upper 8 to 13 feet of the soil identified as being unconsolidated.

Soils found at the southeastern portion of the campus, which have relatively steeper slopes than other parts of the campus, are predominately of the Cieneba and Vista series. Although the shrink-swell characteristics for both soils are low, their erosion hazard ranges from moderate to high. Developed on weathered granitic rocks, these two soil series are minimally developed and relatively thin, with the upper 15 to 24 inches composed of coarse sandy loam above granitic rock.

4.6.3 Regulatory Framework

Federal

Uniform Building Code

The Uniform Building Code (UBC), a national model standard, defines different regions of the United States and ranks them according to their seismic hazard potential. There are four types of these regions, including Seismic Zones 1 through 4, with Zone 1 having the least seismic potential and Zone 4 having the highest seismic potential. The UCR campus is within in Seismic Zone 4; accordingly, any future development would be required to comply with all design standards applicable to Seismic Zone 4.

State

California Building Code

The State of California provides a minimum standard for building design through the California Building Code (CBC). The CBC is based on the UBC, which has been modified for California conditions, and is generally adopted on a jurisdiction-by-jurisdiction basis, subject to further modification based on local conditions.

Chapter 23 of the CBC contains specific requirements for seismic safety. Chapter 29 of the CBC regulates excavation, foundations, and retaining walls. Chapter 33 of the CBC contains specific requirements pertaining to site demolition, excavation, and construction to protect people and property from hazards associated with excavation cave-ins and falling debris or construction materials. Chapter 70 of the CBC regulates grading activities, including drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in Cal-OSHA regulations (Title 8 of the California Code of Regulations [CCR]) and in Section A33 of the CBC.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act of 1972 prohibits the construction of buildings used for human occupancy on active or potentially active surface faults. The Act defines "active" and "potentially active" faults utilizing the same age criteria noted above for the CDMG. However, only those potentially active faults that have a relatively high potential for ground rupture are identified as fault zones. Therefore, not all faults termed "potentially active" by the CDMG are zoned under the Alquist-Priolo Act. No portion of the campus is included within an Alquist-Priolo Earthquake Fault Zone designated by the State of California.

Seismic Hazards Mapping Act

CDMG also provides guidance with regard to seismic hazards. Under CDMG's Seismic Hazards Mapping Act, seismic hazard zones are to be identified and mapped to assist local governments in planning and developing purposes. The intent of this publication is to protect the public from the effects of strong

ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. In addition, CDMG's Special Publications 117, "Guidelines for Evaluating and Mitigating Seismic Hazards in California," provides guidance for evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations.

University Policy on Seismic Safety

The University of California's Policy on Seismic Safety was most recently updated in 1995. This establishes that University policy is "to the maximum extent feasible by present earthquake engineering practice to acquire, build, maintain, and rehabilitate buildings and other facilities which provide an acceptable level of earthquake safety." The level of safety is defined in the University policy. The policy articulates five primary points:

- *Program for Abatement of Seismic Hazards*. Develop a program for the identification and temporary and permanent abatement of seismic hazards in existing buildings and other facilities.
- *Consulting Structural Engineer*. Engage structural engineers to examine existing buildings and other facilities and submit reports on the adequacy of resistance to seismic forces of University facilities, based on Title 24 of the California Code of Regulations and upon the engineers' professional evaluations with respect to Appendix A to the policy.
- *Standards for Seismic Rehabilitation Projects*. Correctional programs for structures that do not provide adequate safety shall provide, at a minimum, an acceptable level of earthquake safety equivalent to the current seismic provisions of Title 24 of the California Code of Regulations, or local seismic requirements, whichever is more stringent, with respect to life safety and prevention of personal injury. Preliminary plans for all seismic rehabilitation shall be reviewed by the consulting structural engineer, and recommendations of the structural engineer shall be incorporated into the project plans by the design engineer.
- *Repair of Buildings and Other Facilities Damaged by Earthquakes*. This section sets standards for University buildings and facilities that are damaged by earthquakes, based on the reduction in lateral load of the structure in question.
- *New Buildings and Other Facilities.* The design of new buildings shall, at a minimum, comply with the current provisions of Title 24 of the California Code of Regulations, or local seismic requirements, whichever is more stringent. Provisions shall also be made for adequate anchoring of nonstructural building elements. No new University structures may be constructed on the trace of a known, active fault. All plans shall be reviewed by a consulting structural engineer, who must, prior to release of funds, certify that the structure complies with the University Policy on Seismic Safety.

4.6.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps 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 2005 LRDP to expose people or structures to rupture of a known earthquake fault, strong seismic ground shaking, or seismic-related ground failure, or to result in substantial soil erosion, or development on a geologic unit or soil that is unstable, existing land uses were compared to proposed future land uses that would be permitted under the 2005 LRDP. For those areas in which new development may occur, existing geologic and soil conditions were reviewed, based on information included in the environmental setting, to determine whether geologic or soils hazards could occur, or whether development could result in substantial soil erosion.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on geology or soils if it would do any of the following:

- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater
- Expose people or structures to potential substantial adverse effects involving
  - Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault
  - Strong seismic ground shaking
  - Seismic-related ground failure, including liquefaction
  - Landslides
- Result in substantial soil erosion or the loss of topsoil
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property

Effects Not Found to Be Significant

Threshold	Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The City of Riverside provides sanitary sewer service to the UCR campus. Existing wastewater infrastructure is located throughout the East Campus, and any new development would connect to or expand the existing wastewater lines. On the West Campus, sewer infrastructure would need to be developed to connect to existing sewer trunk lines. Because no septic tanks or alternative wastewater systems are proposed, the Initial Study (included in Appendix A of this EIR) determined that no effects associated with soils incapable of adequately supporting these systems would occur and no additional analysis is required in this EIR.

Impacts and Mitigation

Threshold	Would the project expose people or structures to potential substantial adverse effects involving ■ Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? ■ Strong seismic ground shaking? ■ Seismic-related ground failure, including liquefaction? ■ Landslides?

Impact 4.6-1 **Implementation of the 2005 LRDP could expose people and/or structures to potentially substantial adverse effects resulting from seismic ground shaking. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures. The new buildings and facilities would accommodate an increase in student enrollment and corresponding increase in the campus population. The development of additional facilities on the UCR campus would expose people and/or structures to potentially substantial adverse effects resulting from seismic ground shaking.

During the planning horizon for the 2005 LRDP, the campus will continue to implement the following existing campus Programs and Practices (PP) that would reduce potential impacts associated with seismic shaking:

PP 4.6-1(a) *During project-specific building design, a site-specific geotechnical study shall be conducted under the direct supervision of a California Registered Engineering Geologist or licensed geotechnical engineer to assess seismic, geological, soil, and groundwater conditions at each construction site and develop recommendations to prevent or abate any identified hazards. The study shall follow applicable*

recommendations of CDMG Special Publication 117 and shall include, but not necessarily be limited to

- *Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site*
- *Potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints*
- *Evaluation of depth to groundwater*

The structural engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations.

PP 4.6-1(b) *The campus shall continue to implement its current seismic upgrade program.*

PP 4.6-1(c) *The campus will continue to fully comply with the University of California's Policy for Seismic Safety, as amended. The intent of this policy is to ensure that the design and construction of new buildings and other facilities shall, as a minimum, comply with seismic provisions of California Code of Regulations, Title 24, California Administrative Code, the California State Building Code, or local seismic requirements, whichever requirements are most stringent.*

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing east of the Pentland Hills Residence Halls complex, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of new recreational facilities on the East Campus, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation, support and open space on the West Campus (north of Martin Luther King Boulevard).

As described above, the campus is not located within an Earthquake Fault Zone as defined by the Alquist-Priolo Earthquake Fault Zoning Act of 1994, and no known active or potentially active faults traverse the campus. Because ground rupture occurrences are generally limited to the location of faults, and no active or potentially active faults are known on the campus, the campus would not be subject to a substantial risk of fault (ground surface) ruptures. However, the campus lies within a seismically active area that includes faults that are expected to produce maximum credible earthquakes of magnitude 5.0 or greater. Therefore, people and structures on campus could be subject to seismically induced groundshaking, which could result in damage to structures and risk to building occupants.

Continued implementation of PP 4.6-1(a), PP 4.6-1(b), and PP 4.6-1(c) would ensure that all new buildings and other facilities would be designed to be consistent with current seismic and geotechnical engineering practice to provide adequate safety levels, as defined in the California Code of Regulations

and the University Policy on Seismic Safety. In addition, the campus would continue the ongoing program to seismically strengthen existing buildings as appropriate and to anchor equipment and other potential hazards in existing buildings.

With implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not expose people and/or structures to potentially substantial adverse effects resulting from rupture of a known earthquake fault, strong seismic groundshaking, or seismic-related ground failure and this impact would be *less than significant*.

Threshold	Would the project result in substantial soil erosion or the loss of topsoil?

Impact 4.6-2 **Excavation of soils in association with 2005 LRDP development could result in substantial soil erosion and the loss of topsoil. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities, the replacement of existing structures, and the conversion of existing open space and agricultural teaching and research fields into the sites for academic buildings and related support facilities. The development of these new structures and facilities could result in substantial soil erosion and the loss of topsoil.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies are relevant to limiting areas of the campus subject to disturbance, and minimizing disturbance on building sites:

PS Land Use 2 — *In order to achieve 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 Land Use 3 — *Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*

PS Open Space 1 — *Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*

PS Open Space 2 — *Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration.*

PS Open Space 3 — *In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.*

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.*

PS Open Space 5 — *Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*

PS 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.*

PS Conservation 2 — *Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.*

PS Conservation 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.*

In addition, continued implementation of the following existing campus Programs and Practices would also reduce erosion at construction sites:

PP 4.6-2(a) — *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 nontoxic 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 are to be covered or should 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

(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

(This is identical to Air Quality PP 4.3-2(b) and Hydrology PP 4.8-3(c).)

PP 4.6-2(b): *In compliance with National Pollution Discharge Elimination System (NPDES), the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):*

(i) Public education and outreach on stormwater impacts

(ii) Public involvement/participation

(iii) Illicit discharge detection and elimination

(iv) Pollution prevention/good housekeeping for facilities

(v) Construction site stormwater runoff control

(vi) Post-construction stormwater management in new development and redevelopment

(This is identical to Biological Resources PP 4.4-2(b) and Hydrology PP 4.8-3(d).)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills Residence Halls complex, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation, parking, and open space on the West Campus (north of Martin Luther King Boulevard).

Development of new facilities or redevelopment of existing building sites at each of these locations would involve site clearance, grading, and other earthmoving activities, which could subject exposed soils to erosion by water or wind. As discussed in the existing conditions, the Monserate, Arlington,

Hanford, and Buren soil series generally underlie the campus. Erosion hazards from these soils range from slight to moderate on the West Campus, and from slight to moderate on most of the East Campus, except for areas in the southeast hills, where the erosion potential is moderate to high. However, development in this area would not occur, with the exception of sensitivity sited utility projects, which could include an additional water storage tank to improve water pressure for fire suppression needs. 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.

LRDP Planning Strategy *Conservation 2* specifies that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. Continued implementation of PP 4.8-3(a), would require continued compliance with SCAQMD Rule 403—Fugitive Dust during construction, which would stabilize soils and prevent erosion through the reduction of dust generation by up to 85 percent, as discussed in Impact 4.3-2 in Section 4.3 (Air Quality). Continued implementation of PP 4.8-3(b) would require continued compliance with the provisions of the Statewide General Construction Activity Stormwater Permit that specifies the implementation of Best Management Practices during project construction. In addition, per NPDES Phase II requirements, the campus has implemented a Stormwater Management Program that includes construction site stormwater runoff control for sites greater than one acre and post-construction stormwater management in new development and redevelopment, as discussed in Section 4.81 Existing Conditions, Hydrology and Water Quality). All of these measures would reduce potential construction-related erosion of soils by wind and water.

With continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not result in substantial soil erosion or the loss of topsoil, and this impact would be *less than significant*.

Threshold	Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Impact 4.6-3 **Construction in areas underlain by soils of varying stability could subject people and structures to hazards associated with landsliding, lateral spreading, subsidence, liquefaction, collapse, or differential settlement. With implementation of relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities, and the replacement of existing structures, which could occur in areas of varying soil and slope stability.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including *Open Space 1* and *Open Space 2*, described under Impact 4.6-1, which limits development on the steep and natural hillsides on the southeast campus and within

the Natural Open Space Reserve. In addition, PS *Conservation 2*, described above under Impact 4.6-2, specifies that buildings and site development be planned to minimize site disturbance and to reduce erosion and sedimentation. With continued implementation of PP 4.6-1(a), described above under Impact 4.6-1, a site-specific geotechnical study to assess potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints would be required. Future development would also be subject to the design and construction requirements of the CBC.

As discussed in the setting section above, most of the UCR campus is underlain predominantly by older alluvium consisting of sands and silty sands, along with moderate amounts of clay in the upper 2 to 5 feet of the soil. Younger alluvium and fill are found in and around the channels of the University Arroyo and Box Springs Arroyo, which have incised the elevated geomorphic surface. Fill materials are found at various locations on the UCR campus, which have been subject to previous grading activities.

The older alluvium found on most of the campus is typically consolidated in a medium dense to dense condition and is generally suitable to support structures. However, certain localized areas have less dense strata and lenses of old alluvium that are susceptible to hydroconsolidation[15]. The younger alluvium material, found in the vicinity of University Arroyo, is generally sandy and porous with a high potential for hydroconsolidation and is generally not suitable for the support of structures. Because fill materials in many areas of the campus were deposited prior to the development of modern building codes, these materials exhibit great variability in their density and compressibility. As such, fill materials may not be suitable for the support of structures, and would need to be recompacted or removed.

The risk of liquefaction at the campus is low, as exploratory drillings and measurements from an on-campus well on the southeast portion of the campus have indicated that the current depth of the groundwater beneath the campus is generally greater than 60 feet. In addition, the older alluvium and bedrock that underlies large portions of the campus are considered to be non-liquefiable regardless of groundwater depth.

The geologic materials located on the campus render the risk for deep-seated landsliding to be very low, even on natural slopes. This is due to the sturdy nature of the alluvial materials and bedrock underlying the majority of the campus, which have no weak planar structures developed that could trigger a large deep-seated landslide. While deep-seated landsliding is unlikely to occur at the campus, surficial failure on natural slopes in the southeastern portion of the campus does pose a potential hazard. However, destruction of natural land formations would not occur from implementation of the proposed project.

Another potential hazard involves rockfall during the event of a strong seismic shaking. Rounded outcrops resulting from weathering of the granitic bedrock can be found in abundant amounts on the bedrock hillside above East Campus Drive. Although most of these outcrops are stable boulders, there are some that could be set into motion during the occurrence of an earthquake or grading in the hillside.

[15] Hydroconsolidation, or soil collapse, typically occurs in recently deposited, Holocene (less than 10,000 years old) soils that were deposited in an arid or semi-arid environment. When saturated, these soils undergo a rearrangement of their grains, resulting in rapid settlement that can cause foundations and walls to crack.

Rockfall onto the campus could result in damage to persons and property. Since this issue was identified in the 1990 LRDP, there has been one occurrence of excavation to clear a site and/or avoid subsequent rockfall as a result of project development. With respect to the southeast hills, implementation of the LRDP Planning Strategies *Open Space 1* and *2*, described above under Impact 4.6-2, would require that the area be preserved and that no major facilities be allowed (except for sensitively sited utility projects) which would avoid soil stability issues in this area.

With continued implementation of PP 4.6-1(a), implementation of the 2005 LRDP would not result in development on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, and this impact would be *less than significant*.

Threshold	Would the project be located on expansive soil, creating substantial risks to life or property?

Impact 4.6-4 **Implementation of the 2005 LRDP could result in construction of facilities on expansive soils, creating substantial risk to people and structures. With implementation of the relevant Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities, the replacement of existing structures, which could occur in areas of varying soil stability, including expansive soils.

During the planning horizon of the 2005 LRDP, continued implementation of PP 4.6-1(a), described above under Impact 4.6-1, would require a site-specific geotechnical study to assess potential for displacement caused by seismically induced shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible soils, landsliding, or other earth movements or soil constraints. Future development would also be subject to the design and construction requirements of the CBC.

As described above, the soil series that comprise the eastern portion of campus include the Arlington, Hanford, Buren, and Monserate. The Buren series has a moderate to low shrink-swell potential. The Monserate soils are found on most of the northeastern part of the campus, and shrink-swell potential is from low to moderate. Soils found at the southeastern portion of the campus, which have relatively steeper slopes than other parts of the campus, are predominately of the Cieneba and Vista series and have low shrink-swell characteristics. The Arlington and Hanford soils are primarily found on the relatively flat-sloped western portion of the campus and have a low shrink-swell characteristic. As most of the soils on the campus have low to moderate shrink-swell characteristics, the potential for water uptake after rainfall to cause soils to expand and damage building foundations is considered low.

All construction on the campus would be required to comply with applicable provisions of Chapter 19 (applies to concrete construction) and Chapter 22 (applies to steel construction) of the CBC or construction standards of Zone 4 of the UBC. Continued implementation of all applicable regulations

and PP 4.6-1(a) would result in recommendations to address expansive soil conditions where appropriate. Such recommendations could include design features such as expansion joints in structures, mounting foundations on concrete piles, or replacing existing soils on a project site with stable fill material, and would either result in a structure that could withstand soils expansion, or a building pad substrate that would not be subject to expansiveness. Identification of expansive soils before construction and implementation of appropriate design measures would ensure that foundations and structures would provide an adequate level of protection according to current seismic and geotechnical engineering practice to provide adequate safety levels, as defined in the California Code of Regulations and the University Policy on Seismic Safety.

With continued implementation of PP 4.6-1(a), implementation of the 2005 LRDP would not result in development on expansive soils, creating substantial risks to life or property, and this impact would be *less than significant*.

4.6.5 Cumulative Impacts

The geographic context for the analysis of cumulative geology and soils impacts is inherently site-specific, rather than cumulative in nature, because each development site has unique geologic considerations that would be subject to uniform site development and construction standards. Development in the City of Riverside and surrounding area is required to undergo analysis of geological and soil conditions applicable to the development site in question. Restrictions on development would be applied in the event that geological or soil conditions pose a risk to safety, and potential cumulative impacts resulting from geological, seismic, and soil conditions would be minimized on a site-by-site basis to the extent that modern construction methods and code requirements provide. Nevertheless, the County of Riverside General Plan Final Program EIR indicates that although adequate study, design, and construction measures can be taken to reduce potential impacts, "as Riverside County grows, the opportunity for the hazards to occur grows also. Therefore, implementation of the proposed General Plan will cumulatively contribute significantly to the increase[d] exposure of people and property to seismic . . . hazards." Impacts resulting from seismic groundshaking were thus regarded as cumulatively considerable.

As described above, and unlike some other areas within the County of Riverside, the UCR campus is not located within an Earthquake Fault Zone as defined by the Alquist-Priolo Act. Additionally, all development on campus would continue to comply with PP 4.6-1(c), described above under Impact 4.6-1, which requires the use of the most stringent seismic safety standards and among the applicable local, State, and federal regulations, such as the UBC and CBC. In addition, all development on campus would comply with PP 4.6-1(a), described above under Impact 4.6-1, which requires site-specific soil engineering studies. Similarly, related projects would be subject to UBC and CBC requirements, as well as local regulations, such as preparation of site-specific soils studies. These measures would minimize seismic risks associated with new buildings and other structures associated with related projects, including the proposed project. Site-specific campus development would not compound the cumulative effect of geologic impacts from regional development due to the localized nature of impacts. Therefore, the campus contribution to the cumulative impacts associated with

exposing people and property to groundshaking effects, as well as the effects of soils constraints associated with differential settlement, liquefaction, and unstable soils would not be cumulatively considerable.

Impacts regarding surficial deposits, such as erosion and downstream water quality, can be cumulative in nature within a watershed. The Santa Ana River watershed forms the geographic context of cumulative erosion impacts. The analysis accounts for all anticipated cumulative growth within this geographic area, as represented by full implementation of the regional growth projections and development of the related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis). Construction activities that would result in ground disturbance could expose soils to erosion, similar to 2005 LRDP development. Regional development, depending on the nature of the project, would be anticipated to comply with the applicable provisions of the general construction permit, BMPs, fugitive dust control measures of SCAQMD Rule 403, and Phases I and II of NPDES. These measures are implemented as conditions of approval of project development and subject to continuing enforcement. As a result, it is anticipated that impacts on the watershed due to runoff and erosion from related projects activity would not be cumulatively considerable. As described under Impact 4.6-2, LRDP Planning Strategies and Programs and Practices would reduce erosion impacts through implementation of an array of development strategies and implementation of BMPs, in compliance with NPDES permits. Therefore, the contribution of the 2005 LRDP to erosional impacts is not anticipated to be cumulatively considerable due to the implementation of measures to reduce erosion and safeguard water quality.

4.6.6 References

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4.7 HAZARDS AND HAZARDOUS MATERIALS

4.7.1 Introduction

This section of the EIR 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 2005 LRDP to create a significant hazard through the routine transport, use, or disposal of hazardous materials or the release of hazardous materials into the environment, to emit hazardous emissions or handle hazardous materials within one-quarter mile of an existing or proposed school, to result in development of a site which is included on a list of hazardous materials sites, to impair implementation of or physically interfere with an adopted emergency response plan, or to expose people or structures to a significant risk from wildland fires.

For purposes of this analysis, hazardous materials include inorganic and organic chemicals and products containing such substances as defined by California laws and regulations, radioactive materials, and biohazardous materials. Potential water quality effects related to surface water runoff from construction sites and/or groundwater dewatering during construction and operation are discussed in Section 4.8 (Hydrology and Water Quality). Impacts related to toxic air contaminants that could be emitted during campus operations are discussed in Section 4.3 (Air Quality).

Data used in the preparation of this section were taken from various sources, including the UCR Department of Environmental Health and Safety, the State Department of Toxic Substances Control (DTSC), previous environmental documentation prepared for the UCR campus, and other campus data sources. Bibliographic entries for reference materials appear in Section 4.7.5 (Reference) of this section.

One comment letter related to hazards or hazardous materials was written in response to the Notice of Preparation circulated for the project. This letter outlined a number of items that the EIR should analyze, including identification of any known or potentially contaminated sites within the project area, whether current or historic land uses have resulted in the release of any hazardous wastes at the project site, delineation of a workplan for environmental investigation, determination of whether the site is in a "border zone," and remediation and mitigation measures should the soil or groundwater contamination be suspected. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

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.

Hazardous Materials at UCR

The campus is a licensed generator of hazardous waste, which includes chemical waste and 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 Administration (VCA) 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 VCA), 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. 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

Among the 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:

- 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 research and instruction facilities, 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, lubricants, 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, virtually all of the buildings on the UCR campus contain commercial products (e.g., cleaners, copier toners, etc.) that could be considered "hazardous materials" under regulatory definitions.

Certain locations on campus may also 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. These sites are discussed below under "Building and Site Contamination."

Hazardous material profiles for campus users have been identified in the UCR Business Plan prepared in conformance with the State Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Law), which 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. The 2003 UCR Business Plan, which is currently being updated, will provide the most accurate and current data available regarding hazardous materials use on the campus.

The City of Riverside Fire Department administers the Business Plan requirements for UCR and other private and public entities in the City of Riverside that are subject to the Business Plan Act. UCR and the Riverside Fire Department agreed upon the format and contents of the UCR Business Plan in 1991. The plan is currently being rewritten by EH&S and will be submitted to Riverside Fire Department after its completion. 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. The revised version of the plan will incorporate renovation information, which in some cases would result in the removal of asbestos.

EH&S provides requirements to campus users of hazardous materials concerning proper disposal of the resulting hazardous wastes at UCR; included in these requirements are prohibitions against the discharge of any hazardous wastes into storm drains or the sanitary sewer system. Table 4.7-1 identifies the amount of hazardous waste generated by the UCR Campus in the year 2001 (most recent list available). As shown, total hazardous waste produced in fiscal year 2001 is approximately 121.3 tons.

Table 4.7-1 Amount of Hazardous Waste Generated by UCR in 2001

Waste Type	*Tons*
Asbestos	50.5
PCB	6.8
Lead	0
Oil	6.9
Oil/Soil	0
Lamps	2.5
Radioactive	0.7
Photochemical	3.8
Bulk Liquid	6.5
Lab Pak	42.7
Biohazardous	0.9
Total	***121.3***

Source: UCR EH&S Department, 2002.

Chemical Hazardous Waste

There are fourteen types of chemical waste managed by EH&S, and these include solvents, cleaners, paint/sludge, asbestos, mercury, photochemicals, 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. The campus 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. The campus currently contracts with Clean Harbors, which is the transporter and treatment storage disposal facility (TSDF) responsible for UCR's lab pack waste and bulk liquid waste. These wastes are eventually incinerated for energy recovery. Onyx Environmental is currently the transporter and TSDF for cylinders and potentially explosive chemicals (PEC) on campus. ECTI is the contracted transporter for asbestos, which is eventually disposed of at Waste Management Inc., a landfill in Kettleman, California. 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.

As stated above, campus-generated chemical waste from laboratories and campus operations in 2001 was approximately 121.3 tons, approximately 35 percent higher than 2000 levels. In addition to the increase in lab waste, a part of this increase was due to an increase in asbestos and PCB waste, which resulted from the continuation of asbestos abatement projects on campus, as well as an active program to remove old PCB-containing transformers and capacitors from campus. Consequently, the increase in campus-generated asbestos and PCB chemical waste in 2001 represents a one-time increase, rather than a trend.

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 hauler to permitted off-campus facilities for incineration, treatment, recycling, or other means of disposal.

Radioactive Waste

The UCR campus generates radioactive wastes from research and teaching activities. As is the case with hazardous chemical waste, 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. Sealed sources are radioactive materials encased in containers designed to prevent release of radioactive materials to the environment. Limited types and quantities of radioisotopes are also 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 (see "Regulatory Framework" below).

Unless proper precautions are taken, exposure to ionizing radiation can result in adverse human health effects that range from short-term mild symptoms (such as sunburn) to serious illness or death, depending on the type of radiation and the amount of exposure. The extent to which exposure would result in any adverse effects depends on the radioisotope, the amount, and the length of time of exposure.

UCR currently contracts with Thomas Gray & Associates, a radioactive-hazardous waste management group, as the transporter for the campus' radioactive waste, most of which are shipped to a radioactive waste facility in Turlock, California. The amount of radioactive waste generated at UCR increased from approximately 0.5 ton in 2000 to 0.65 ton in 2001, which is proportional with recent growth in academic and research space at UCR. No radioactive waste is incinerated on campus.

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. The federal Nuclear Regulatory Commission regulations divide LLRW into Classes A, B, and C, depending on the concentration of isotopes and the half-life of the material. Class A is waste that is usually segregated from other waste classes at the disposal site; Class B is waste that must meet more rigorous requirements on waste form to ensure stability after disposal; and Class C is waste that must not only meet more rigorous requirements on waste form to ensure stability, but also requires additional measures at the disposal facility to protect against inadvertent intrusion (Code of Federal Regulations, Title 10, Volume 2, revised January 1, 2001:171–173). UCR contracts with radioactive waste brokers to remove radioactive waste from the campus, and the waste brokers take the waste to approved radioactive waste facilities.

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 (California Health and Safety Code Section 117635).

Current State testing, monitoring, and disposal regulations and EH&S policies pertaining to the management of biohazardous materials, including infectious agents, would minimize the potential for biohazardous substances to be present in newer building components or fixtures that would be removed during demolition. Because infectious agents such as bacteria, parasites, and viruses cannot regrow or survive for long periods outside their hosts (e.g., more than a few days or months), there is little likelihood that such materials would be present in older building fixtures because of their age and because conditions would not be conducive to their survival.

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.).

As shown in Table 4.7-1, the amount of biohazardous wastes generated at UCR in 2001 was approximately 0.9 ton. 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 currently is contracted with TCI, which is a biohazardous waste transporter that helps to ship infectious wastes from the campus off site for incineration.

Laboratory Animal Use

Because UCR is a center for research and teaching in the biomedical sciences, the campus uses animals for both teaching and research activities. 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 would produce biohazardous wastes. Safety hazards are associated with handling of research animals. These hazards are addressed through the Laboratory/Research Safety Program, discussed below.

Building and Site Contamination

Because of materials commonly used in the construction and operation of buildings on the UCR campus, 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.

As required by Public Resources Code Section 21092.6, lists compiled pursuant to Section 65962.5 of the Government Code (the "CORTESE" list), as well as additional databases maintained by federal and State agencies, were reviewed to determine whether the campus is included on any list pertaining to hazardous materials or hazardous wastes. These lists also identify known or suspected locations with soil or groundwater contamination.

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 is currently required in the area where one UST was removed in the agricultural operations yard on the West Campus, south of Martin Luther King Boulevard. With the

exception of this site, 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.

There are several locations on campus where oil is stored. These include various locations on the West Campus (south of Martin Luther King Boulevard), 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. On the East Campus, two 1,000-gallon, double-wall diesel and gasoline ASTs are located near South Campus Drive. In addition, the residence hall cafeterias located in the central area of the campus have stock rooms storing containers of cooking oil along with 200-gallon bins for the disposal of used cooking oil. The residence halls also have small facility maintenance shops that store 55-gallon drums of lubricants and other smaller containers of lubricants and solvents. As such, potential spills from the storage tanks and containers on campus would pose some hazards to both the campus population and the campus environment.

The campus is listed on the CORTESE list due to contamination that was identified on the West Campus, south of Martin Luther King Boulevard. 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.

Infrastructure

Asbestos

Asbestos, a naturally occurring fibrous material, was used for years in many building materials for its fireproofing and insulating properties. Loose insulation, ceiling panels, and brittle plaster are potential sources of friable (easily crumbled) asbestos. In addition, underground utility tunnels may also contain asbestos. Nonfriable asbestos is generally bound to other materials such that it does not become airborne under normal conditions. 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. Inhalation of airborne fibers is the primary mode of asbestos entry into the body, making friable materials the greatest potential health risk. Asbestos-related health problems include lung cancer and asbestosis.

In accordance with Sections 25915 through 25916 of the California Health and Safety Code, EH&S maintains a campuswide inventory of locations of asbestos-containing building materials and provides annual campuswide 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.

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). However, some paints manufactured after 1978 for industrial uses or marine uses legally contain more than 0.06 percent lead. Because many structures on the UCR campus were constructed prior to 1978, wall surfaces and other building materials may contain lead-based paints, which can pose a risk of exposure due to chipped or peeling paint, or from renovation or demolition of buildings or building materials that contain lead. Excessive exposure to lead (even low levels of lead) can result in the accumulation of lead in the blood, soft tissues, and bones. 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.

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. Although the campus has an ongoing program to replace electrical equipment that contain PCBs, 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 that would be demolished or renovated under the proposed project. Nearly all ballasts manufactured prior to 1979 contain PCBs. PCB ballasts manufactured after July 1, 1978, which do not contain PCBs, are required to be clearly marked "No PCBs." PCBs, which are highly persistent in the environment, can cause various human health effects, including liver injury, irritation of the skin and mucous membranes, and adverse reproductive effects. PCBs are also suspected human carcinogens. In California, PCB-containing materials must be disposed as hazardous waste.

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. Mercury liquid evaporates very slowly if exposed to air. At certain levels of exposure, mercury vapors are toxic and can cause kidney and liver damage. 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 Programs and Practices

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.

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[16], which provides each program's elements, contact personnel, applicable manuals and policy, and Web links to other pertinent government agencies and information sources. A brief description of each program is provided below:

Biosafety

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 Standard (Title 8, Code of California Regulations, Section 5193) issued by California Occupational Safety and Health Administration (Cal/OSHA) requires all employers with employees who may have occupational exposure to blood or other potentially infectious materials (OPIM) to prepare, implement, and maintain an Exposure Control Plan. EH&S has prepared this plan to provide 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).

In compliance with the Medical Waste Management Act adopted by the State of California in April 1, 1991, EH&S at the UCR Campus has 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.

Emergency Management

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. Any variations to the procedures provided in this plan would be implemented only by or with the approval of the Campus Emergency Management Task Force.

[16] http://www.ehs.ucr.edu/

Environmental Health

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). The objective of the PSP is to establish a safe working environment for all campus employees who use pesticides. The PSP is applied to minimize pesticide and pesticidal chemical exposure of all persons within the jurisdiction of the UCR campus community. 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.

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.

Campus Emergency Operations Plan

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-hazards based approach and provides the basic administrative structure and protocols necessary to cope with credible emergencies.

Hazardous Materials Program

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 (which contains information about the location of, and emergency procedures for, campus buildings in which hazardous materials are handled) 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.

Industrial Hygiene & 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 the Injury/Illness Prevention Program (IIPP) and Respiratory Protection Program (RPP).

The role of the IIPP 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. RPP requires all activities involving the use of respiratory protection equipment in facilities controlled by UCR to be conducted in compliance with Title 8, California Code of Regulations General Industry Safety Order Sections 1531, 5144, Title 3, Pesticides and Control Operations Sections 6700 to 6900, and with the provisions of the Respiratory Protective Manual. The EH&S Office serves to technically assist departments in their administration of the Respiratory Protection Program by providing a centralized facility and database for purchasing, cleaning, maintaining, fitting, and evaluating all on-site respiratory equipment and for training campus personnel in its proper use.

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 Environmental Health & Safety. 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.

Chemical Hygiene Plan (CHP)

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 under the auspices of the University of California, Riverside, and to comply with the requirements of California Code of Regulations, Title 8 Section 5191. This plan outlines the minimum health and safety requirements for those departments/units that are engaged in the "laboratory use of hazardous chemicals." 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.

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

Many UCR research personnel use various types of radiation in their laboratory activities. In nearly all cases, use of radiation involves some level of regulatory control. 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). The RS program must ensure that the use of ionizing radiation during research, instruction, and service is conducted in such a manner as to protect health and minimize danger to life, property, and the environment. Under UCR's policy, the level of radiation exposure to employees, students, and the public must be "As Low as Reasonably Achievable" (ALARA).

EH&S serves to implement the RS program, which includes surveillance of all users of radioisotopes and/or radiation-producing machines and equipment. Specific functions include 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.

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. Supervisors can contact TIP for assistance in obtaining and documenting training for their employees. Employees receive training in health and safety practices and occupational hazards through classes, videos, publications, and manuals. TIP also reviews and disseminates regulatory training requirement updates and developing and publishing safety information.

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.

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.

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. Each request from the list is handled on a case-by-case basis, and the owner of the chemical has the right to refuse the request; consequently, small amounts can more easily be accommodated through sharing than larger amounts, though larger amounts of some chemicals can often be accommodated by the storage room.

Spill Prevention, Control, & Countermeasures Plan

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.

Groundwater Conditions

As noted in Section 4.8 (Hydrology and Water Quality), measured depth to groundwater on campus is anticipated to range from 60 to 200 feet below grade, with flow in a generally westerly direction. The campus overlies the Riverside II Groundwater sub basin of the larger Upper Santa Ana River Groundwater Basin, which underlies the entire Riverside area. Although the campus has no knowledge of groundwater contamination within the campus, the extent to which groundwater quality may have been

affected by historic activities is unknown. In addition, the campus is not identified as a significant groundwater recharge area.

Hazardous Materials Transportation Routes

The campus contracts with licensed hazardous waste transporters to ensure that all hazardous wastes generated by 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 Department of Transportation (DOT), California Highway Patrol (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.

Hazardous Materials Emergency Response

As stated in Section 4.12 (Public Services), 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 as described in the "Spill Prevention, Control, & Countermeasures Plan" section above. 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. An update to the campus' Business Plan is currently underway, and the RFD has information on the locations of all large quantities of chemicals stored and used on campus. 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.

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. 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). Major federal laws and issue areas include the following statutes (and regulations promulgated thereunder):

- Resource Conservation and Recovery Act (RCRA)
- Hazardous and Solid Waste Amendments Act (HSWA)
- Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
- Superfund Amendments and Reauthorization Act (SARA)
- Emergency Planning and Community Right-to-Know (SARA Title III)

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).

Hazardous chemical and biohazardous materials management laws in California include the following statutes (and regulations promulgated there under):

- Hazardous Waste Control Act
- Safe Drinking Water and Toxic Enforcement Act of 1986 ("Proposition 65")
- Hazardous Substances Act
- Hazardous Waste Management Planning and Facility Siting ("Tanner Act")
- Hazardous Materials Storage and Emergency Response
- California Medical Waste Management Act

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. This program was established under the amendments to the California Health and Safety Code made by SB 1082 in 1994. The six consolidated programs are:

- Hazardous Materials Business Plan
- Risk Management and Prevention Plan
- Hazardous Waste (including Tiered Permitting)
- Underground Storage Tanks
- Above Ground Storage Tanks (including the SPCC)
- UFC Article 80 HMMP and HMIS

As the CUPA for the County of Riverside, Riverside County Environmental Health Department, Hazardous Materials Unit maintains the records regarding location and status of hazardous materials sites in the County and administers programs that regulate and enforce the transport, use, storage, manufacturing, and remediation of hazardous materials. By designating a CUPA, Riverside County has accurate and adequate information to plan for emergencies and/or disasters and to plan for public and firefighter safety.

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.

Medical Waste/Biohazardous Materials Regulations

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[17] are defined for four tiers of relative hazards. Federal and State laws, such as the Animal Welfare Act, specify standards for record-keeping 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,

[17] Biosafety Levels have been established by the USDHHS to determine the level of safety precautions that must be used when handling biohazardous materials. Biosafety Level 1 is for the least hazardous biological agents and Biosafety Level 4 is for the most hazardous biological agents. They are based on the characteristics of the agent (virulence, ability to cause disease, routes of exposure, biological stability, and communicability), the quantity and concentration of the agent, laboratory procedures, and the availability of therapeutic measures and vaccines.

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.

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.

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.

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.

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.

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.

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 Hazardous Reduction Act of 1992 (Title X) requires disclosures of the presence of lead paint in residential structures.

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.

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 Riverside Fire Department (RFD).

Local Regulations

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.

The California Health and Safety Code grants discretionary authority to the local agency—typically the local Certified Uniform Program Agency—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.

4.7.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects, or the location of those projects. To identify the potential for implementation of the 2005 LRDP to result in additional hazards related to the use, storage, transport, or release of hazardous materials, the potential for new development to result in an increase in the use of hazardous materials was identified. To determine the potential for implementation of the 2005 LRDP to result in the emission or handling hazardous materials within one-quarter mile of a school, to result in development of a site which is included on a list of hazardous materials sites, to impair implementation of an emergency response plan, or to expose people or structures to wildland fires, existing land uses were compared to proposed future land uses that would be permitted under the 2005 LRDP, and the potential for these future land uses to generate additional hazardous materials.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact related to hazards or hazardous materials if it would do any of the following:

- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area
- For a project located within the vicinity of a private airstrip, result in a safety hazard for people residing or working in the project area

- 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 one-quarter 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, create a significant hazard to the public or environment
- 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

Effects Not Found to Be Significant

Threshold	Would the project be located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, resulting in a safety hazard for people residing or working in the project area?

The campus is not located within two miles of a public airport or public use airport, and has not been included in an airport land use plan. Consequently, the Initial Study prepared in conjunction with the Notice of Preparation (included in Appendix A of this EIR) concluded that implementation of the 2005 LRDP would not result in any impacts from safety hazards associated with any public use airport, and no additional analysis is required in this EIR.

Threshold	Would the project be located within the vicinity of a private airstrip, resulting in a safety hazard for people residing or working in the project area?

The Initial Study concluded that because the UCR campus is not located within the vicinity of a private airstrip, implementation of the 2005 LRDP would not result in any impacts from safety hazards for people residing or working on the UCR campus, and no additional analysis is required in this EIR.

Impacts and Mitigation

Threshold	Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Impact 4.7-1 **Implementation of the 2005 LRDP 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). With**

implementation of the relevant Program and Practice, this impact would be *less than significant*.

Implementation of the 2005 LRDP could result in the development of additional academic buildings, laboratories and other research facilities that would involve the use, storage, transport, and disposal of hazardous materials.

During the planning horizon for the 2005 LRDP, the campus would continue to implement the following existing campus Program and Practice related to the transport, use, storage, or disposal of hazardous materials.

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.*

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, including approximately 3.9 million gsf of new instruction and research facilities for academic programs and professional schools, which may include teaching and research laboratories, greenhouses, and other research facilities. In addition, the increase in occupied building space would result in an increase in the use of cleaning products and other materials routinely used in the building maintenance. This would result in an increase in the amount of hazardous materials that are used, stored, transported, and disposed.

Programs and activities that have the potential to handle or use hazardous materials are summarized below.

- *General Campus Research*—A variety of research programs currently exist on the UCR campus and will continue to grow with implementation of the 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 Martin Luther King Boulevard. Agricultural operations that require the use, handling, and disposal of hazardous materials could continue in these areas.
- *Bourns College of Engineering*—This College anticipates significant growth in demand for its programs, and instruction and research activities have the potential to use, handle, and dispose of hazardous materials.

- *Division of Biomedical Sciences*—This unit has the capability to evolve into a full-scale school or college that would greatly expand instructional and research programs. This expansion could increase the range of programs and activities that routinely use, handle, and dispose of hazardous materials.
- *Art and Theater Departments*—Coursework and production associated with the fine arts and performing arts would continue and could increase under the 2005 LRDP. Activities associated with these departments include the use of hazardous materials, and program growth would increase the types of activities that use and dispose of hazardous materials.
- *Maintenance and Physical Plant*—With an increase in on campus occupied space, 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.

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 2005 LRDP. 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. 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 2005 LRDP) would be staff and students involved in instruction and research activities that involve the use of hazardous materials and construction employees who work at locations where hazardous materials may be present. Whether a person exposed to a hazardous substance at one of these locations would suffer adverse health effects depends upon a complex interaction of factors to determine the effects of exposure to hazardous materials: the exposure pathway (the route by which a hazardous material enters the body); the amount of material to which the person is exposed; the physical form (e.g., liquid, vapor) and characteristics (e.g., toxicity) of the material; the frequency and duration of exposure; and the individual's unique biological characteristics, such as age, gender, weight, and general health. Adverse health effects from exposure to hazardous materials may be short-term (acute) or long-term (chronic). Acute effects can include damage to organs or systems in the body and possibly death. Chronic effects, which may result from long-term exposure to a hazardous material, can also include organ or systemic damage, but chronic effects of particular concern include birth defects, genetic damage, and cancer. In the case of pathogenic (disease-causing) organisms or biohazardous materials, for transmission to humans to occur, the pathogen must be present in sufficiently high numbers to cause infection, and contact with the organism must occur.

Off-site hazardous materials exposure would only reasonably occur through limited circumstances such as accident during transport or use. The risks associated with the transport of hazardous materials, both to and from campus and internally, are addressed in Impact 4.7-3. Potential impacts resulting from the emission of toxic air contaminants from fume hoods and other sources are addressed in Impact 4.3-6 and Impact 4.3-7 of Section 4.3 (Air Quality) of this EIR.

Any added demands associated with hazardous materials and waste resulting from implementation of the 2005 LRDP would be met through modifications of these existing programs and services over time to make sure that they continue to render the campus in compliance with the numerous hazardous materials laws and regulations at all levels of government.

With continued implementation of PP 4.7-1, implementation of the 2005 LRDP 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*.

Impact 4.7-2 **Implementation of the 2005 LRDP could expose construction workers and campus occupants to significant health or safety risks through renovation or demolition of buildings, or relocation of underground utilities that contain hazardous materials. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP could result in the demolition of structures, and the extension and/or relocation of underground utility systems. In addition, existing buildings on the UCR campus would continue to be subject to maintenance, renovation, or expansion. Renovation or demolition of existing buildings, and relocation or modification of underground utility systems could expose construction workers and campus occupants to hazardous materials and wastes that may be present in existing buildings or in underground utilities.

During the planning horizon of the 2005 LRDP, continued implementation of PP 4.7-1 described above under Impact 4.7-1, would require that any hazardous materials encountered during renovation or demolition of buildings or relocation or modification of underground utilities be handled in accordance with applicable laws and regulations. In addition, PP 4.7-2 would ensure that hazardous materials present in buildings to be demolished would be identified and handled appropriately:

PP 4.7-2 *The campus shall perform hazardous materials surveys on buildings and soils, if applicable, prior to demolition. When remediation is deemed necessary, surveys shall identify all potential hazardous materials within the structure to be demolished, and identify handling and disposal practices. The campus shall follow the practices during building demolition to ensure construction worker and public safety.*

Demolition of existing buildings could release hazardous materials if lead-based paint or asbestos-containing materials are present in structures. Any activity that involves cutting, grinding, or drilling

during building renovation or demolition, or relocation of underground utilities, could release friable asbestos fibers and/or lead dust unless proper precautions are taken. As noted in Section 4.7.2 (Existing Conditions), all applicable federal and State rules and regulations must be followed when asbestos-containing materials are disturbed during demolition or renovation. Project demolition and renovation activities in which asbestos would be disturbed are subject to regulation under South Coast Air Quality Management District Rule 1403. The campus is required to notify federal and local government agencies prior to beginning any renovation or demolition that could disturb asbestos as well as the use of precautions and safe work practices to eliminate or reduce the potential for release of asbestos fibers. Medical examinations and monitoring of employees engaged in activities that could disturb asbestos are also required. Similarly, lead is regulated as a hazardous material and a toxic air contaminant and, according to applicable health and safety and hazardous materials regulations, warrants inspection, testing, and removal from building materials on campus.

Buildings demolished during construction activities could also contain hazardous materials, including radioactive materials, which could be present in fixtures or building materials removed during demolition. The Broadscope Radioactive Materials License requires testing and implementation of decontamination and waste handling activities in accordance with applicable regulations when facilities using radioactive materials are renovated or demolished. This would ensure that risks due to the potential exposure to radioactive materials in structures as they are renovated and/or demolished are less than significant.

With continued implementation of PP 4.7-1 (or equivalent measures) and PP 4.7-2 and continued compliance with federal and State health and safety laws and regulations, implementation of the 2005 LRDP would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials associated with renovation or demolition of buildings, or relocation of underground utilities, and this impact would be *less than significant*.

Threshold	Would the project 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?

Impact 4.7-3 **Implementation of the 2005 LRDP would increase the amount of hazardous materials used on and transported to and from the campus, which could expose people to potential health risks in the event of an accident or accidental release. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, including approximately 3.9 million gsf of new instruction and research facilities for academic programs and professional schools, which may include teaching and research laboratories, greenhouses, and other research facilities that may use hazardous materials in teaching and research activities. In addition, the increase in occupied building space would

result in an increase in the use of cleaning products and other materials routinely used in the building maintenance. This would result in an increase in the amount of hazardous materials that are used, stored, transported and disposed, and could increase the potential for an accident or accidental release of hazardous materials or wastes.

During the planning horizon of the 2005 LRDP, continued implementation of PP 4.7-1, described above under Impact 4.7-1, would require that existing campus 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 would require the implementation of hazardous materials minimization strategies related to research, maintenance, and instructional activities.

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 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 Routes" section above, while UCR policies and procedures specifically govern receipt of hazardous materials at UCR, under Title 49 of the Code of Federal Regulations in California 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. UCR would continue to contract with licensed hazardous waste transporters that follow all DOT and CHP hazardous materials transportation regulations.

The transportation of hazardous materials can result in accidental spills, leaks, toxic releases, fire, or explosion. Licensed vendors bring hazardous materials to and from the campus, and manifests are completed and maintained by EH&S for all hazardous waste that is transported in connection with campus activities. In conformance with legal requirements, incoming radioactive material is typically routed through the EH&S Radiation Safety for monitoring and recording of each acquisition.

UCR currently ships hazardous chemical waste for disposal approximately every 60 days, biohazardous waste either once per week if stored above freezing (the quantity of waste produced and stored at this temperature is not large enough to require weekly transport of wastes) or once per 90 days if stored below freezing, and radioactive waste as necessary. Therefore, on average, hazardous waste shipments occur on an infrequent basis, barring unusual circumstances such as laboratory demolition. 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 all applicable federal and State laws related to the transportation of hazardous materials will continue to reduce the likelihood and severity of accidents during transit.

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 (between and within buildings, from room to room, within hallways, and up and down stairwells and elevators). Accidents could occur as these materials are moved about the campus, and exposure of site occupants could occur through fire or explosion. 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. In addition to health impacts associated with direct contact from an accidental spill, indirect impacts could also occur. Spills that occur on permeable surfaces may be difficult to decontaminate and may require complete removal of the surface. In areas without adequate ventilation, including partially enclosed outdoor areas such as walkways, stairwells, or courtyards, vapors from released volatile materials could be trapped in stagnant air pockets and persons entering these areas after such a spill could be subject to health hazards associated with such vapors. 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) will 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 off campus or on city streets.

Hazardous Materials Storage

Most hazardous materials stored on campus present little risk of upset. Hazardous waste is stored in laboratories (in Satellite Accumulation Areas), which are emptied and cleaned on a regular basis, and in a

secure 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).

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 will 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. 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 materials will continue to wear appropriate protective equipment and safety equipment is routinely available in all areas where hazardous materials are used. In addition, all persons who handle hazardous waste on campus are 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), is currently being rewritten and updated by EH&S. The UCR Business Plan would provide 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 2005 LRDP.

With continued implementation of PP 4.7-1 (or equivalent measures) and PP 4.7-3 continued compliance with federal and State health and safety laws and regulations, implementation of the 2005 LRDP 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*.

Impact 4.7-4 **Implementation of the 2005 LRDP could create a risk of exposure of construction workers and campus occupants to contaminated soil or groundwater. With implementation of the relevant Programs and Practices and Mitigation Measure, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the demolition and replacement of existing structures. This would increase new academic, recreational, housing, parking, and support facilities on the West Campus (north of Martin Luther King Boulevard) in an area currently occupied by agricultural teaching and research fields. In addition, existing campus lands and facilities would be subject to maintenance and renovation activities. Construction activities could occur in areas that contain contaminated soil or groundwater, which could expose construction workers or campus occupants to hazardous substances.

During the planning horizon of the 2005 LRDP, continued implementation of PP 4.7-1 described above under Impact 4.7-1, would require that existing campus 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 4.7-4 would require an assessment if suspected contaminated soil and/or groundwater is encountered during construction, notification of EH&S, and preparation of a remediation plan if required.

PP 4.7-4

Prior to demolition of structures on the campus or new construction on former agricultural teaching and research fields, the campus shall complete a Phase I environmental site assessment to determine the potential for soil or groundwater contamination on a project site. If the assessment determines that a substantial potential exists on the site, the campus shall develop and implement an appropriate testing and, if needed, develop a remediation strategy prior to demolition or construction activities.

If contaminated soil and/or groundwater is encountered during the removal of on-site debris or during excavation and/or grading activities

(i) The construction contractor(s) shall stop work and immediately inform EH&S.

(ii) An on-site assessment shall be conducted to determine if the discovered materials pose a significant risk to the public or construction workers.

(iii) If the materials are determined to pose such a risk, a remediation plan shall be prepared and submitted to EH&S to comply with all federal and State regulations necessary to clean and/or remove the contaminated soil and/or groundwater.

(iv) Soil remediation methods could include, but are not necessarily limited to, excavation and on-site treatment, excavation and off-site treatment or disposal, and/or treatment without excavation.

(v) Remediation alternatives for cleanup of contaminated groundwater could include, but are not necessarily limited to, on-site treatment, extraction and off-site treatment, and/or disposal.

(vi) The construction schedule shall be modified or delayed to ensure that construction will not inhibit remediation activities and will not expose the public or construction workers to significant risks associated with hazardous conditions.

The campus is listed, pursuant to Government Code Section 65962.5, on a list of hazardous materials sites, due to the former pesticide disposal pits located over an approximately 1-acre area in the agricultural teaching and research fields south of Martin Luther King Boulevard. Remediation was completed in this area in December 2002, and contamination no longer remains on the site. Implementation of the 2005 LRDP would preserve the area south of Martin Luther King Boulevard for agricultural teaching and research fields, and no development is anticipated in this area.

While there have been localized areas of soil contamination in connection with leaking USTs in the past, all but one of the sites on campus have been remediated and properly closed. There is one remaining UST location on campus (on the West Campus), and these tanks conform to federal, State, and local regulations and are registered and permitted by the RFD. Thus, no soil or groundwater contamination would be encountered to the location of a known UST.

Given the depth of groundwater on campus (generally greater than 60 feet), the potential for groundwater to be encountered during construction is considered remote. If required during construction, dewatering activities could result in the withdrawal of groundwater that may contain contaminants above regulatory levels, which could present a hazard to people or the environment unless properly managed. Continued implementation of PP 4.8-1, described in Section 4.8, would require compliance with any Waste Discharge Requirements issued by the Santa Ana Regional Water Quality Control Board.

Construction, renovation, or demolition of buildings or extension or modification of utility infrastructure could encounter abandoned pipes, discarded building materials, unknown USTs, or previously unidentified contaminated soil and/or groundwater during construction activities, which could result in the exposure of construction workers or campus occupants to hazardous materials. Continued implementation of PP 4.7-4 would require an assessment if suspected contaminated soil and/or groundwater is encountered during construction, notification of EH&S, and preparation of a remediation plan if required.

The use of pesticides and herbicides on campus is governed by the State Department of Pesticide Regulation and is overseen by the UCR Pesticide Safety Program, which serves to minimize pesticide and pesticidal chemical exposure of all persons on the UCR campus. Use of pesticides and herbicides in conjunction with the agricultural teaching and research fields varies depending on the crop, time of year, and nature of the teaching and research programs.

Although there is no known contamination associated with historic use of agricultural teaching and research fields, due to the long-term use of common agricultural practices, including the application of pesticides, fertilizers and other agricultural chemicals, the potential exists for residues of agricultural chemicals to be present in the soil in this area. Development of new academic, recreational, housing, parking, and support facilities in the West Campus north of Martin Luther King Boulevard, could result in exposure of these residues, if any, to construction workers during construction and campus occupants during operation of the buildings and other facilities.

Because the presence of any such agricultural chemical residues may not result in discolored soil (which might be readily detected by visual inspection) or may not result in a detectable odor, continued implementation of PP 4.7-4 may not result in detection of these any such residues, nor the development of remediation plans for any such contamination. As such, even with implementation of the existing Programs and Practices, implementation of the 2005 LRDP could result in the exposure of construction workers and campus occupants to contaminated soil or groundwater.

MM 4.7-4 would require the campus to perform appropriate soil testing prior to development on former agricultural lands to determine whether contaminants are present in amounts that would pose health hazards to campus occupants and construction workers.

MM 4.7-4 *Prior to development on former agricultural lands, appropriate soil testing shall be performed to determine whether chemical residue is present from prior activities in amounts that would pose health hazards to construction workers and/or occupants of new buildings. If contamination is determined to be present, PP 4.7-4 shall be implemented.*

With implementation of MM 4.7-4, this impact would be reduced to a *less-than-significant* level, and implementation of the 2005 LRDP would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving release of hazardous materials into the environment.

Threshold	Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Impact 4.7-5 **Implementation of the 2005 LRDP could result in hazardous emissions or require the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. With implementation of the relevant Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP could result in the development of additional academic buildings, laboratories and other research facilities that would involve the use, storage, transport and disposal of

hazardous materials, which may occur within one-quarter mile of an existing or proposed off-campus school.

During the planning horizon of the 2005 LRDP, continued implementation of PP 4.7-1, described above under Impact 4.7-1, would require that existing campus Programs and Practices (or equivalent measures) related to the use, storage, transport or disposal of hazardous materials and wastes be continued.

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional student housing east of the Pentland Hills and Lothian Residence Halls, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, new recreational facilities adjacent to the new East Campus housing, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation and open space on the West Campus (north of Martin Luther King Boulevard). In addition, during the planning horizon of the 2005 LRDP, existing on-campus activities, including maintenance and renovation of buildings, landscape maintenance, and agricultural teaching and research programs, would continue. The development of new buildings and facilities, and the continued operation of existing maintenance and renovation activities and teaching and research activities could result in routine hazardous emissions, or require handling of hazardous or acutely hazardous materials.

Existing schools within one-quarter mile of the UCR campus perimeter include the following:

- Emerson Elementary School at 4660 Ottowa Avenue (Riverside Unified School District)
- Islamic Academy of Riverside Elementary School at 1038 West Linden Street (Private)
- Riverside Garden Elementary School at 1085 West Linden Street (Private)
- Highland Elementary School at 700 Highlander Drive (Riverside Unified School District)
- University Heights Middle School at 1155 Massachusetts Avenue (Riverside Unified School District)
- Hyatt Elementary School at 4466 Mount Vernon Avenue (Riverside Unified School District)

While the amount and type of hazardous materials may vary over time with changes in research and additions to hazardous materials lists, the general range and type of hazardous materials used on campus is not expected to substantially change upon implementation of the project. UCR will continue to use materials, some of which are considered hazardous, during the course of daily operations. While hazardous materials and waste could be handled within one-quarter mile of an existing or proposed school as a result of implementation of the 2005 LRDP, these materials would not exist in quantities significant enough to pose a risk to occupants of the school or the campus community, as established by Impact 4.7-1 through Impact 4.7-4, and Impact 4.7-6.

Compliance with federal, State, and local regulations pertaining to hazardous wastes, as well as with existing campus Programs and Practices, and procedures required by PP 4.7-1, would ensure that risks

associated with hazardous emissions or materials to existing or proposed schools located within one-quarter mile of campus would be eliminated or reduced through proper handling techniques, disposal practices, and/or clean-up procedures.

With continued implementation of PP 4.7-1, implementation of the 2005 LRDP would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school in a manner that would create a significant hazard to the public or school occupants through the routine transport, use, or disposal of hazardous materials, and this impact would be *less than significant*. Short-term air quality impacts to sensitive receptors are addressed in Impact 4.3-4, and the results of the Health Risk Assessment are discussed in Impact 4.3-6 of Section 4.3 (Air Quality) of this EIR.

Section 15186 of the CEQA Guidelines also establishes requirements for school projects, as well as projects near schools, to ensure that potential health impacts resulting from exposure to hazardous materials, wastes, and substances are examined and disclosed in an environmental document. Specifically, when a project located within one-quarter mile of a school involves the construction or alteration of a facility that might reasonably be anticipated to emit hazardous or acutely hazardous air emissions or handle acutely hazardous materials or a mixture containing acutely hazardous materials in a quantity equal to or greater than that specified in Section 25536(a) of the Health and Safety Code, the Lead Agency must (1) consult with the affected school district regarding the potential impact of the project when circulating the environmental document and (2) notify the affected school district in writing prior to approval and certification of the environmental document. These requirements would only pertain to the nearby schools mentioned above, which are the only schools located within one-quarter mile of the UCR Campus. The 2005 Draft LRDP EIR will be sent to relevant school administrations in the Riverside Unified School District (RUSD) for review and comment, and the campus would continue to comply with the provisions of Section 15186 of the CEQA Guidelines, as it applies to any future development.

Threshold	Would the project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Impact 4.7-6 **Implementation of the 2005 LRDP would not result in construction on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. This impact would be *less than significant*.**

The campus is listed, pursuant to Government Code Section 65962.5, on a list of hazardous materials sites, due to the former pesticide disposal pits located in the agricultural teaching and research fields on the West Campus. Remediation was completed over an approximately 1-acre area. Since remediation

has been completed and no construction is planned in this area, it would not present a risk of exposure to hazardous materials, as also discussed under Impact 4.7-4, above.

Areas where oil storage has occurred include the agricultural area southwest of the main campus, the Corporate Yard located on the northern part of the campus, and near South Campus Drive at the grounds maintenance facility. The former storage tank at the grounds maintenance facility has been removed and the soil is now clean. In turn, an aboveground tank has now been installed in this area with proper containment. Remediation is currently required in the area where one UST was removed in the agricultural operations yard on the West Campus, south of Martin Luther King Boulevard. With the exception of this site, each of the other UST locations where spills or leaks had occurred have received regulatory closure from Santa Ana RWQCB staff, and no further action at those locations is necessary. If future UST-related cleanup were determined to be necessary, all work would be performed in accordance with the applicable guidelines. All non-UST hazardous waste storage locations on campus are managed in accordance with all applicable federal and State laws, such as RCRA and the California Hazardous Waste Control Law, as well as all existing campus Programs and Practices, described in the "UCR Programs and Practices" section and the "Regulatory Framework" section.

As remediation has already been completed in the former pesticide disposal pits located in the agricultural teaching and research fields on the West Campus, and no construction is planned in that area under the LRDP, no risk of exposure to hazardous materials would be present. Therefore, implementation of the 2005 LRDP would not result in development located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, create a significant hazard to the public or the environment, and this impact would be *less than significant*.

Threshold	Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Impact 4.7-7 **Implementation of the 2005 LRDP could impair implementation of, or physically interfere with, an adopted emergency response or emergency evacuation plan. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in the construction of new buildings and facilities that could result in lane or roadway closures and the occupation of which would increase the campus population. In addition, future development could occur within areas that are currently identified as emergency assembly areas.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies are relevant to limiting areas of the campus subject to development, preservation, and/or creation of open space, and preservation of emergency vehicle access:

PS Land Use 3	*Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*
PS Open Space 1	*Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*
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.*
PS Open Space 5	*Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*
PS Open Space 6	*Provide a new campus Landmark Open Space on the West Campus, The Grove, to reflect campus citrus heritage and as a gathering/activity space.*
PS Open Space 7	*Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.*
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.*

In addition, the following campus Programs and Practices shall continue to be implemented during the planning horizon of the 2005 LRDP.

PP 4.7-7(a)	*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 appropriate signage indicating alternative routes.* (This is identical to Transportation and Traffic PP 4.14-5.)
PP 4.7-7(b)	*To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Design and Construction shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes.* (This is identical to Transportation and Traffic PP 4.14-8.)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the

academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills and Lothian Residence Halls, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation and open space on the West Campus (north of Martin Luther King Boulevard).

Construction and operation activities associated with development under the 2005 LRDP could potentially affect emergency response or evacuation plans due to temporary construction barricades or other obstructions that could impede emergency access on campus. Continued implementation of PP 4.7-7(a) and PP 4.7-7(b) to preserve a single traffic lane on campus roadways whenever feasible, and consultation with emergency service providers regarding roadway closures would assure that impacts to emergency access associated with construction during implementation of the 2005 LRDP would be less than significant. Refer also to Impact 4.7-7 and Impact 4.7-8 in Section 4.14 (Transportation and Traffic) for additional discussion of this issue.

EH&S is responsible for the campus' Emergency Operations Plan, which is intended to safeguard people, property, research, and other resources from the consequences of natural and man-made hazards through mitigation, preparedness, response, and recovery. Multiple emergency access or evacuation routes are provided on-campus to ensure that in the event one roadway or travel lane is temporarily blocked, another may be utilized. Although the City of Riverside does not have a Master Emergency Response Plan prepared specifically for the campus, the campus coordinates with the City during development and update of its Emergency Operations Plan to ensure awareness and proper coordination when emergency situations occur on the campus. The Emergency Operations Plan is currently in the process of being updated.

Implementation of the 2005 LRDP could result in the siting and development of new buildings and facilities that may currently be identified as emergency assembly areas or evacuation routes.

Implementation of LRDP Planning Strategies *Land Use 3* (maintain teaching and research fields south of Martin Luther King Boulevard), *Open Space 1* (protect the southeast hills as a *Natural* Open Space Reserve), *Open Space 4* (provide landscaped buffers and setbacks along campus edges), and Open Space 5 (retain the Carillon Mall as a landmark open space) would preserve existing open space, which may be used as assembly areas or evacuation routes. In addition, LRDP Planning Strategies *Open Space 6* (provide a new campus landmark open space on the West Campus, The Grove) and *Open Space 7* (provide neighborhood parks and tot lots in the family housing areas) would create new open space on the West Campus, which could serve as emergency assembly areas. In addition, LRDP Planning Strategy *Transportation 4* (limit general vehicular circulation in the central campus, but allow transit, service, and emergency vehicle access) would preserve emergency vehicle access in the central campus area. Furthermore, fire lanes established on campus by the Fire Marshal cannot be obstructed.

Even with implementation of the identified LRDP Planning Strategies and Programs and Practices, implementation of the 2005 LRDP could result in development that could physically interfere with an adopted Emergency Operations Plan, given the magnitude of development that could occur during the

LRDP planning horizon. MM 4.7-7(a) requires the avoidance of evacuation assembly areas, as designated under the Emergency Operations Plan, for the siting of construction staging areas. MM 4.7-7(b) requires an annual review of the Campus Emergency Operations Plan to determine whether an update of the plan is needed to accommodate new on-campus development.

MM 4.7-7(a) *Evacuation zones designated in the UCR Emergency Operations Plan will be avoided, to the extent feasible, when siting construction staging areas. Where evacuation zones cannot be avoided, alternative evacuation zones shall be identified. UCPD and the Riverside Fire Department shall be notified of alternative evacuation zones so that they can respond accordingly to any emergencies.*

MM 4.7-7(b) *The campus Emergency Operations Plan shall be reviewed on an annual basis and updated as appropriate to account for new on-campus development, which may require changes to the plan, such as revised locations for Campus Evacuation Zones.*

With implementation of MM 4.7-7(a) and MM 4.7-7(b), this impact would be reduced to a *less-than-significant* level, and implementation of the 2005 LRDP would not impair implementation of or physically interfere with an adopted emergency response plan.

Threshold	Would the project 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?

Impact 4.7-8 **Development of facilities in the southeastern portion of the campus (adjacent to the southeastern hills) could expose people or structures to a risk of loss, injury, or death involving wildland fires. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the area south of South Campus Drive and new academic facilities in the areas currently occupied by Parking Lots 13 and V10, east of East Campus Drive. These areas are located adjacent to the southeast hills and the Botanic Gardens, which may be subject to wildland fires.

With implementation of LRDP Planning Strategy *Open Space 1*, described above under Impact 4.7-7, steep and natural hillsides on the southeast campus area would be protected as a *Natural* open space reserve. The southeast hills will be preserved during the LRDP planning horizon as a *Natural* open space reserve, and as that area is primarily occupied by coastal sage scrub and annual grasslands (as discussed in Section 4.4.2, Existing Setting, Biological Resources) which are susceptible to wildland fires (e.g., from

the nearby Box Springs Mountains). Development in areas in proximity to the hills could expose people or structures to wildland fires.

Although the proposed development of academic buildings is not anticipated to increase the potential for fires to occur, the proximity of additional people and structures to this area would increase the risk of exposure to wildland fires that could occur in the nearby Box Springs Mountains and spread to on-campus areas dominated by natural vegetation. Thus, even with implementation of the identified Planning Strategy, implementation of the 2005 LRDP could expose people or structures to a risk of loss, injury, or death involving wildland fires.

MM 4.7-8(a) would require landscaping with appropriate plant materials and MM 4.7-8(b) would require implementation of annual fuel management procedures.

MM 4.7-8(a) — *Provide landscaping around development areas adjacent to preserved open space that emphasizes native or traditional plant material where appropriate and provides a transition to developed areas in a manner that minimizes dense vegetation immediately adjacent to structural development. Landscaping shall be shown on building plans, and plans shall be reviewed and approved for conformance with this measure prior to project design approval and project-specific construction documents.*

MM 4.7-8(b) — *Implement annual fuel management procedures to maintain a firebreak between the undeveloped areas and structures.*

With implementation of MM 4.7-8(a) and MM 4.7-8(b), this impact would reduced to a *less-than-significant* level, and implementation of the 2005 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

4.7.5 Cumulative Impacts

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 and development of the off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis).

It is anticipated that future growth in the Riverside area will result in an incremental increase in the amount of hazardous materials used, treated, transported, and disposed areawide, 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 cumulatively considerable.

Project-related impacts as a result of hazardous materials use, transport, or disposal, or as a result of accidental release of hazardous materials would also 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 for each project under the 2005 LRDP. Consequently, the contribution of the 2005 LRDP to cumulative impacts is not cumulatively considerable.

It is possible that a number of the related projects and other future development in the City of Riverside will involve significant demolition activities, or development on former agricultural lands, which could subject construction workers to health or safety risks through exposure to hazardous materials, although the individual workers potentially affected would vary from project to project. It is anticipated that future development projects will adhere to the applicable federal, State, and local requirements that regulate worker safety and exposure. As a result, impacts would not be cumulatively considerable. As discussed under Impact 4.7-2, UCR will continue to adhere to these applicable regulations, as well as established campus Programs and Practices. As a result, the 2005 LRDP's contribution to cumulative impacts associated with potential exposure of construction workers to hazardous materials will not be cumulatively considerable.

It is further possible that a number of the related projects and other future development in the City of Riverside could expose residents and construction workers to contaminated soil or groundwater. It is anticipated that future development projects will adhere to the applicable federal, State, and local laws and regulations that govern underground storage tanks and pesticide use, as well as requirements applicable to disposal and cleanup of contaminants. As a result, impacts would not be cumulatively considerable. In the event that previously unidentified soil or groundwater contamination is discovered, UCR will continue to adhere to these regulations, as well as established campus Programs and Practices, as discussed under PP 4.7-4 (described under Impact 4.7-4). As a result, the 2005 LRDP contribution to cumulative impacts associated with exposure to contaminated soil or groundwater would not be cumulatively considerable.

Future development in the City of Riverside, including related projects, may involve hazardous emissions or the handling of acutely hazardous materials, substances, or wastes within one-quarter mile of an existing or proposed school. It is anticipated that future development will comply with applicable laws and regulations pertaining to hazardous wastes, and that risks associated with hazardous emissions or materials to existing or proposed schools located within one-quarter mile of future development would be eliminated or reduced through proper handling, disposal practices, and/or clean-up procedures. Accordingly, impacts on schools associated with hazardous emissions or handling of hazardous materials would not be cumulatively considerable. UCR will comply with applicable hazardous materials and disclosure requirements as identified in PP 4.7-1. As a result, the 2005 LRDP contribution to cumulative impacts on schools associated with hazardous emissions or handling of hazardous materials within a quarter mile of an existing or proposed school would not be cumulatively considerable.

Future development in the City of Riverside, including the related projects, may be located on or near a site included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. It is anticipated that future development will comply with applicable laws and regulations pertaining to hazardous wastes, and that risks associated with identified hazardous materials sites would be eliminated or reduced through proper handling, disposal practices, and/or clean-up procedures. In many cases, development applications for projects affected by hazardous materials on identified sites would be denied by the relevant permitting authority if adequate cleanup or treatment is not feasible. Accordingly, impacts on the public or environment associated with development on or near hazardous materials sites would not be cumulatively considerable. As discussed under Impact 4.7-6, no development is proposed on campus in the agricultural fields south of Martin Luther King Boulevard, an area where remediation was recently completed. All previously leaking USTs on campus have been remediated and properly closed. All remaining USTs on campus conform to applicable laws and regulations and are registered and permitted by the Riverside Fire Department. If future UST-related cleanup were determined to be necessary, all work would be performed in accordance with applicable guidelines. All non-UST hazardous waste storage locations are managed in accordance with all applicable federal and State laws, such as RCRA and the California Hazardous Waste Control Law, as well as all existing campus Programs and Practices. As a result, the 2005 LRDP's contribution to cumulative impacts associated with development on or near hazardous material sites would not be cumulatively considerable.

Construction and operation associated with the related projects and other future development in the City of Riverside could result in activities that could interfere with adopted emergency response or evacuation plans, primarily by temporary construction barricades or other obstructions that could impede emergency access. It is anticipated that future development projects will undergo CEQA review of potential impacts on adopted emergency response or evacuation plans and will be required to implement measures necessary to mitigate potential impacts. As a result, impacts relating to inference with adopted emergency response or evacuation plans would not be cumulatively considerable. Construction and operation activities under the 2005 LRDP with respect to emergency response or evacuation plans due to temporary construction barricades or other obstructions that could impede emergency access on campus are mitigated by PP 4.7-7(a), PP 4.7-7(b), and MM 4.7-7(a) and (f). As a result, the 2005 LRDP's contribution to cumulative impacts associated with inference with adopted emergency response or evacuation plans would not be cumulatively considerable.

Related projects could include development in areas susceptible to wildland fires. None of the other specific related projects identified in the City would result in development adjacent to fire-prone areas. However, development in the larger Riverside County area would occur adjacent to large, undeveloped areas. These projects would could increase human activity in areas prone to wildland fires and thus increase the potential for these fires to occur. In addition, the proximity of additional people and structures to areas prone to wildland fire would increase the risk of exposure to this risk. New development would undergo project-specific review to ensure that individual project design measures address risks to wildland fires. Implementation of the 2005 LRDP would include infill development in areas adjacent to the southeast hills and the Botanic Gardens, which are may be subject to wildland fires.

Due to the potential for widespread development to occur, particularly in proximity to areas subject to wildland fires, impacts could be cumulatively considerable. However, the project would not increase risks associated with wildland fires, as the majority of LRDP development would not be in or near fire-prone areas, and impacts would be further reduced through MM 4.7-8(a) and MM 4.7-8(b). Therefore, the project contribution to this impact would not be cumulatively considerable

4.7.6 References

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4.8 HYDROLOGY AND WATER QUALITY

4.8.1 Introduction

This section of the EIR describes the existing hydrology and water quality conditions on the UCR campus and analyzes the potential for implementation of the 2005 LRDP to violate any water quality standards or waste discharge requirements, deplete groundwater supplies or interfere with groundwater recharge, alter the existing drainage pattern of the area that would result in substantial erosion or siltation, increase the rate or amount of surface runoff 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, place housing or other structures within a 100-year flood hazard area, or to expose people or structures to risk of loss, injury, or death involving flooding. Discussion of impacts related to water supply and wastewater treatment are included in Section 4.15 (Utilities).

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, technical and environmental analyses prepared in conjunction with the proposed University Arroyo Flood Control and Enhancement Plan, and a Hydrologic Analysis of Peak Runoff Conditions prepared by Phillip Williams & Associates (Appendix G of this EIR), and the UCR Stormwater Management Plan. Bibliographic entries for reference materials appear in Section 4.8.6 (References) of this section.

Five comment letters related to hydrology and water quality were written on the Notice of Preparation circulated for the project. One letter stated that the project would have potentially significant impacts with respect to drainage runoff. Another letter requested an analysis of LRDP policy consistency with applicable SGAG policies related to hydrology and water quality. LRDP consistency with SCAG policies is addressed in the Section 4.9 (Land Use). The other letters requested that the EIR address the impact of increased runoff due to an increase in the number of buildings on campus (and associated parking lots), resulting in additional impervious surfaces, and the use of landscaping to decrease runoff. One commenter also requested a correction to the project description (provided in the Notice of Preparation) related to a proposed drainage improvement project. The Notice of Preparation, those responses written to the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.8.2 Existing Conditions

Regional Hydrology

Surface Water

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.

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.

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.

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. Groundwater supplies are currently in an overdraft condition and have been subject to adjudication. Water supply to the campus is addressed in Section 4.15 (Utilities).

The Soil Conservation Service classifies soils into four hydrological groupings, 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.

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 are shown in Figure 4.8-1, and areas subject to 100-year flooding are shown in Figure 4.8-2. Major storm drainages are shown in Figure 4.8-3.

East Campus

The University Arroyo watershed comprises an area of approximately 2,294 acres, with most of that area located east of the campus, including a portion of the Box Springs Mountains, which rise approximately 1,700 feet within 2 miles east of campus. Steep canyon tributaries from the mountains discharge surface runoff onto broad alluvial fans toward a confluence at Islander Park east of Watkins Drive. Surface runoff then flows westward towards UCR along Big Springs Road. Directly east of Watkins Drive, an intake culvert in the center of Big Springs Road collects a portion of the surface flow into a 36-inch sub-surface pipe. At the eastern campus entrance, a series of large road grates on Big Springs Road direct a portion of the remaining surface flow into a 72-inch culvert, which continues west to the Gage Basin. During large storm events, a portion of flows bypass the grates and enter the campus, resulting in localized ponding along Big Springs Road and portions of Parking Lot 13.

Over time, portions of the University Arroyo have been channelized or flow diverted to underground culverts. The portion along Big Springs Road is an engineered channel between Parking Lot 13 and the road. Along North Campus Drive, the arroyo includes two shallow detention basins, designed to retain stormwater during large events. The eastern basin (east of the access road to the Veitch Student Center and Parking Lot 15) is undeveloped. The westernmost basin (south of the Aberdeen-Inverness Residence Halls), known as The Glade, is landscaped with a lawn and surrounded by cultivated shrubs and trees. At Aberdeen Drive, surface flow is diverted to a 39-inch culvert, and then flows westward beneath the Lower Intramural Fields. West of Canyon Crest Drive, both the 39-inch and 72-inch culverts discharge into an open channel reach referred to as the Gage Basin. At the western end of the Gage Basin, stormwater enters two parallel 60-inch-by-54-inch box culverts that flow underneath the freeway toward Linden Avenue. Figure 4.8-1 shows the University Arroyo, detention basins, and underground drainage pipes within the campus.

The University Arroyo has three on-campus tributaries, as shown on Figure 4.8-1: (1) an unnamed arroyo, which enters the campus west of Valencia Hill Drive and runs between the Pentland Hills and Lothian Residence Halls; (2) the Botanical Gardens Arroyo, (which has two minor tributary channels and) traverses the Botanical Garden, and then runs northwest towards East Campus Drive; and (3) a small unnamed arroyo, which parallels East Campus Drive into the Botanical Garden tributary just east of Parking Lot 10.

The unnamed northern tributary to the University Arroyo daylights from underground piping from Valencia Hill Drive northeast of the campus and runs between Pentland Hills Residence Halls and Lothian Residence Hall to the glade at the northeast corner of Aberdeen Drive and North Campus Drive. Near Valencia Hill Drive, the channel is deeply incised, while between Pentland and Lothian, the channel becomes a broad swale.

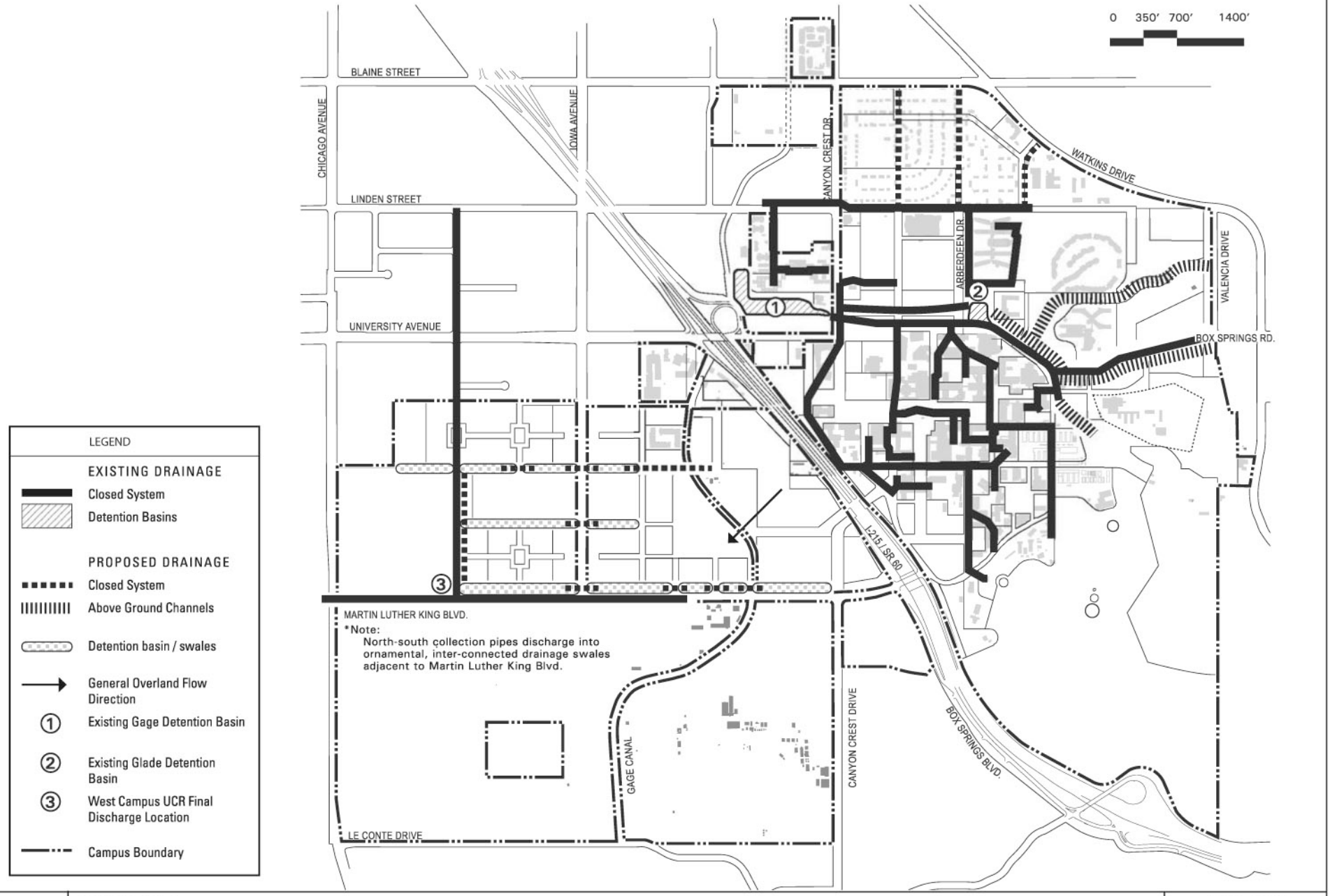

FIGURE **4.8-1**

Arroyos within the UC Riverside Campus

Not to Scale

10537-00

Source: UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

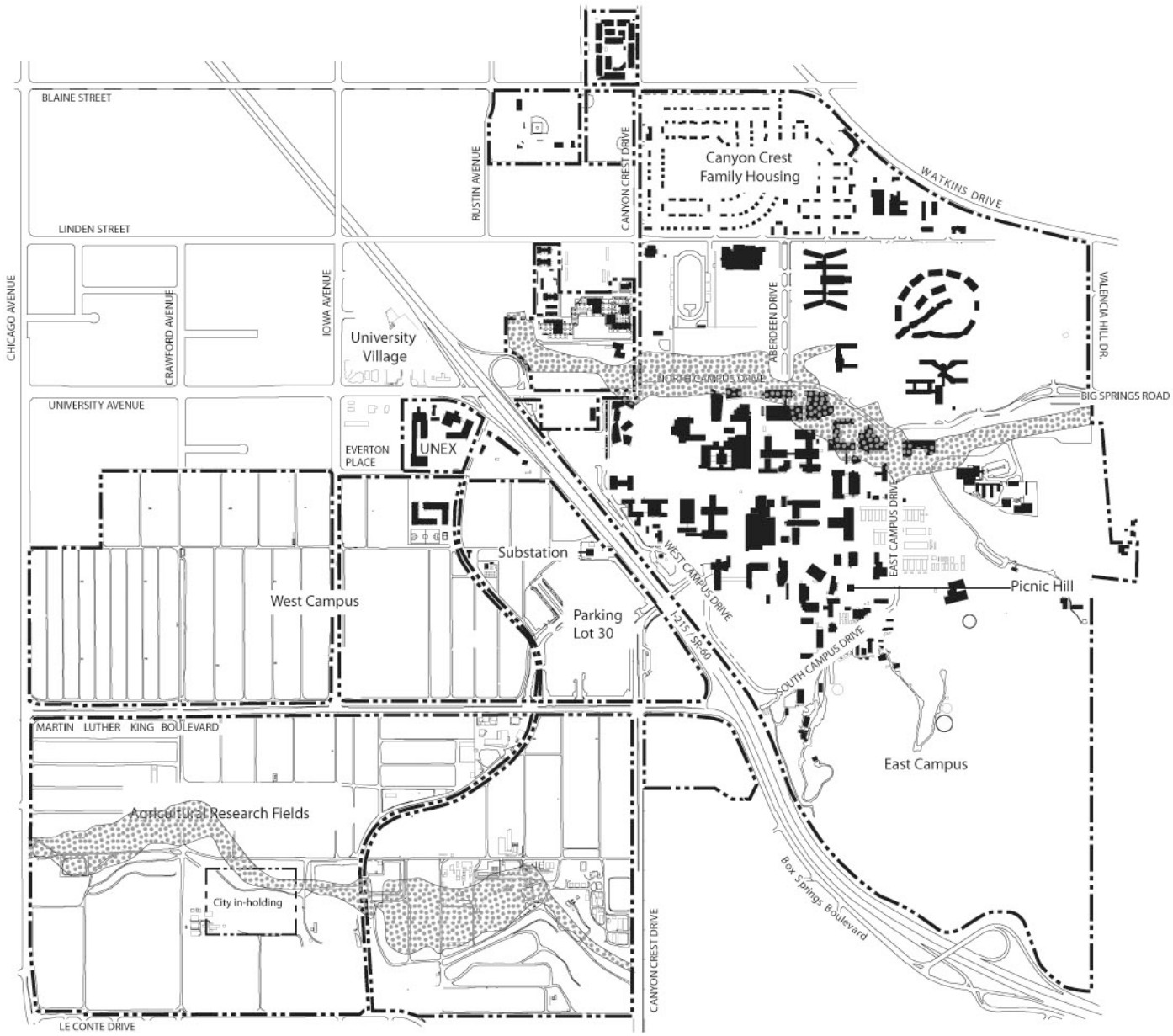

FIGURE **4.8-2**

FEMA Map

Scale: 1" = 1,400'

10537-00

***Source*:** UC Riverside LRDP, 2005; City of Riveside

UC Riverside

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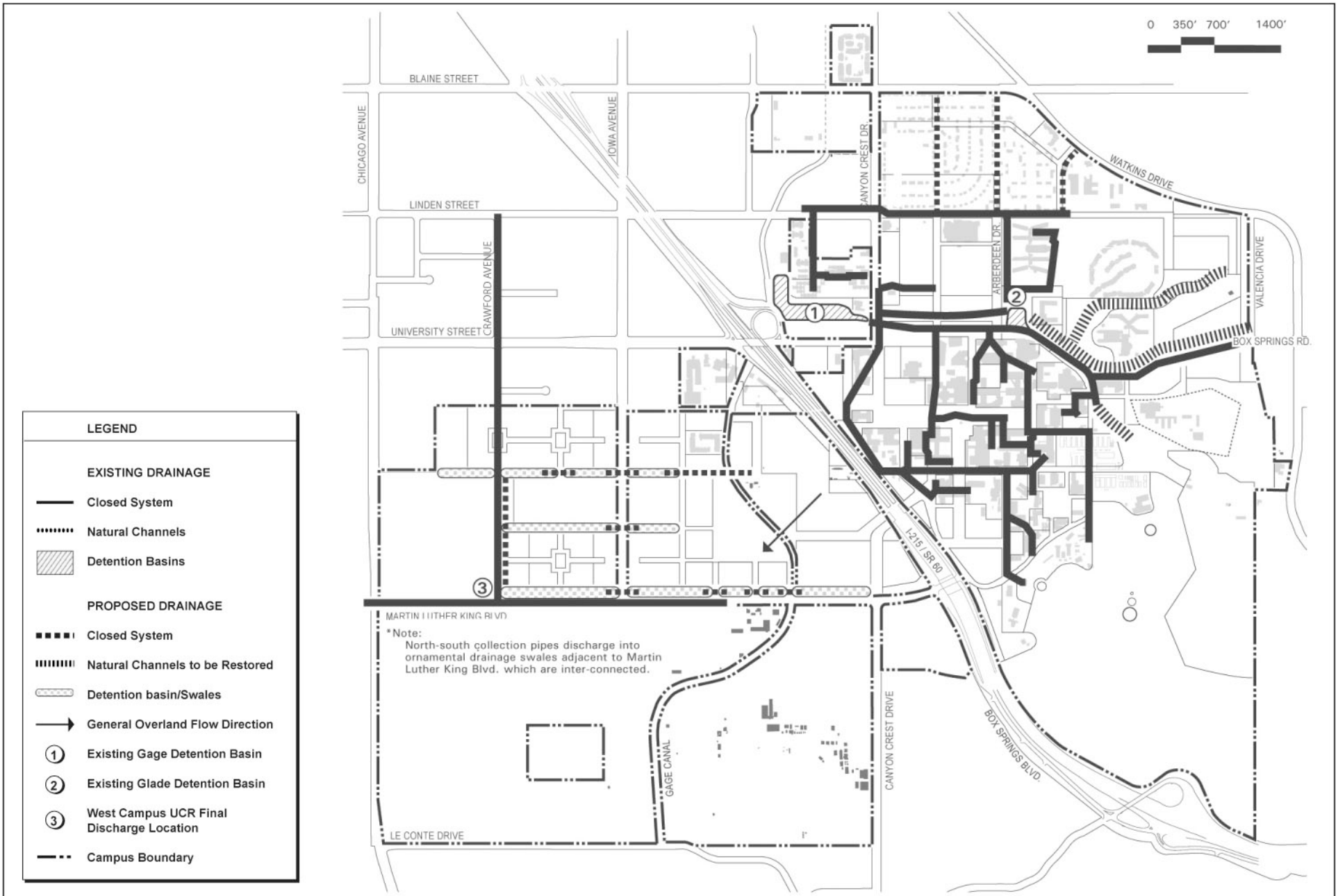

FIGURE **4.8-3**

Major Storm Drainages on Campus

Scale: 1" = 1400'

10537-00

Source: UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

The Botanic Gardens Arroyo runs through the Botanic Gardens and then extends from the gardens entrance to Parking Lot V10 east of East Campus Drive. Two tributaries intersect the Botanic Gardens Arroyo: (1) an eastern tributary located between the northern boundary of the Botanic Gardens and an unpaved access road south of the Salinity Lab and (2) a western tributary that begins in the southeastern hills between the Botanic Gardens and the greenhouses east of East Campus Drive. Flows from the Botanic Gardens Arroyo connects to the 72-inch storm drain on Big Springs Road via a 48-inch underground culvert located along East Campus Drive, starting at the south entry to Parking Lot 10 across from the Science Library.

A small unnamed tributary to the University Arroyo is located at the southern edge of Parking Lot 13, where flows from this short drainage course are diverted into an underground culvert.

Peak flows in the University Arroyo during a 100-year storm event have been estimated at 1,232 cubic feet per second (cfs) at the entrance to the East Campus (at Big Springs Road and Valencia Hill Drive), 1,480 cfs at the confluence of the University and Botanical Gardens Arroyos, and 1,700 cfs at the inlet to the Gage Basin, west of Canyon Crest Drive (Phillip William & Associates 2001).

Due to flooding concerns on campus, the University has explored several improvements to reduce the extent of the 100-year floodplain created by stormwater flows that come off of the Box Springs Mountains and flow westward flooding the Islander Park site, Big Springs Road and the campus including Parking Lot 13, the surface channels and roadway along Big Springs Road, East Campus Drive, and North Campus Drive, as well as flooding the Glade, the Lower Intramural Fields, and the Gage Basin area.

The *University Arroyo Restoration & Storm Drain/Flood Control Plan* was developed in concept in 1995 as a methodology of decreasing the extent of the University Arroyo 100-year flood plain as it traverses the campus from the east at the intersection of Big Springs Road and Valencia Hill Drive to the Gage Basin on the west. This was necessary to increase the amount of "buildable" acreage on the northern edge of the Academic Core for new facilities/buildings needed due to student enrollment growth. These new facilities/buildings would be located primarily in the Athletic Fields north of North Campus Drive. The project would have been an area solution to potential flooding to eliminate the need for costly, design specific mitigation for each building.

At the suggestion of the consultants hired in 2000 to develop the 1995 concept into a working plan, the campus explored a partnership with the City of Riverside to develop a regional plan which not only decreased the extent of the flood plain on campus but provided flooding mitigation above and below the campus within the city of Riverside as well as the development/restoration of the undeveloped portion of Islander Park, a City facility, within the 100 year flood plain at the base of the Box Springs Mountains. An Initial Study for this project, referred to as the *University Arroyo Flood Control and Enhancement Plan and Islander Park Improvements*, was completed for the project, which included the creation of two detention basins on the floor of the undeveloped parkland, piping to connect the basins with existing underground pipe at the intersection of Big Springs Road and Valencia Hill Drive, enlargement and enhancement of

above ground channels along Big Springs Road on campus, a detention basin at the foot of the Botanical Gardens parking lot, enlargement and enhancement of above ground channels along East Campus Drive, the "Glade" area and North Campus Drive. The project was approved by the City Council with a Negative Declaration; however, a CEQA lawsuit was filed, and the City was required to provide an EIR for the project. The City is pursuing the project, but without the campus's partnership due to timing issues regarding future development on campus. The campus is again looking at the 1995 campus area solution to mitigate the extent of the flood plain on campus.

With the need to move ahead in a timely fashion to provide a local solution to decrease the extent of the University Arroyo flood plain on campus, the *University Flood Control and Enhancement Project* is under consideration. The conceptual plan is similar to the original 1995 plan with the inclusion of the detention basin at the base of the Botanic Gardens tributary, additional surface channel enlargement including the Glade, and a 6-by-6-foot underground culvert, which will carry stormwater across the Athletic Fields to the Gage Basin. It is anticipated that native plant communities will be restored or established along the disturbed area of the surface elements. The area of disturbance for the piping on the Athletic Fields will be reestablished as turf or will be developed with trees, shrubs, and groundcover appropriate to the buildings/facilities constructed along this reach.

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. The Box Springs Arroyo on the West Campus is shown in Figure 4.8-1.

The portion of the West Campus north of Martin Luther Boulevard drains predominantly via surface flow in a southwesterly direction, entering an existing 42-inch storm drain on Martin Luther King Avenue (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.

Water Quality

Santa Ana River

Water Quality standards for wastewater discharge into surface waters are developed, monitored, and enforced by the State Water Resources Control Board (SWRCB) and the Santa Ana Regional Water Quality Control Board (SARWQCB). The SARWQCB issues permits for discharge of wastewater

effluent and stormwater in the Santa Ana River watershed. The SARWQCB is charged with adopting and enforcing water quality protection standards, which (1) preserve beneficial uses of water, (2) meet applicable water quality standards, and (3) do not impair present or future beneficial uses of water or otherwise unreasonably degrade water quality.

The SARWQCB currently conducts water quality monitoring programs in the Santa Ana River watershed, which is shown in Figure 4.8-4. Additional agencies also monitor water quality in the Upper Santa Ana watershed, including the Santa Ana Watershed Project Authority, California Department of Water Resources, San Bernardino County Environmental Health Department, Riverside County Health Department, California Department of Fish and Game, Temescal Water Company, San Bernardino Valley Municipal Water District, City of San Bernardino, and the Cucamonga County Water District.

The quality of the water within the Santa Ana region reflects the influences of local topography, subsurface geology, and land use. Water in the mountain streams is generally of very high quality (low in dissolved mineral content). As the water leaves the mountains, surface flows are diverted for domestic use, recharge of the groundwater basins, and irrigation of agricultural lands, including dairy farms in the Chino Basin. The presence of urban and suburban development and agricultural uses affects the quality of water. The SARWQCB has noted that major pollutants of concern in urban runoff include heavy metals, sediment, coliform bacteria, pesticides, and nutrients and that the sources of these pollutants include industrial sites where appropriate pollution control and best management practices (BMPs) are not implemented, construction sites where erosion and siltation controls and BMPs are not implemented, and runoff from urbanized areas.

In 1998, the State Water Resources Control Board adopted a list of impaired water bodies (the "303(d)" list) for the State of California, which was amended and updated in 2002 (and adopted in February 2003). The list identifies portions of the Santa Ana River (below the City of Riverside) as impaired by the presence of pathogens and identifies dairies as the most likely source of this contamination. No streams in the vicinity of the UCR campus are identified as impaired.

Campus Stormwater Quality

Although no monitoring of on-campus stormwater has been conducted, the quality of the stormwater runoff from the UCR would be expected to be typical of urban watersheds and may contain pollutants such as landscaping chemicals (nitrates, phosphates, herbicides, and pesticides), oil and grease and metal brake dust from automobiles, and sediment from aerial deposition of dust or soil erosion. Present and potential water quality concerns identified by the SARWQCB for tributaries of the Santa Ana River in suburban areas include the discharge of contaminated urban and irrigation runoff, which may affect identified beneficial uses including recreation, freshwater habitat, and wildlife habitat.

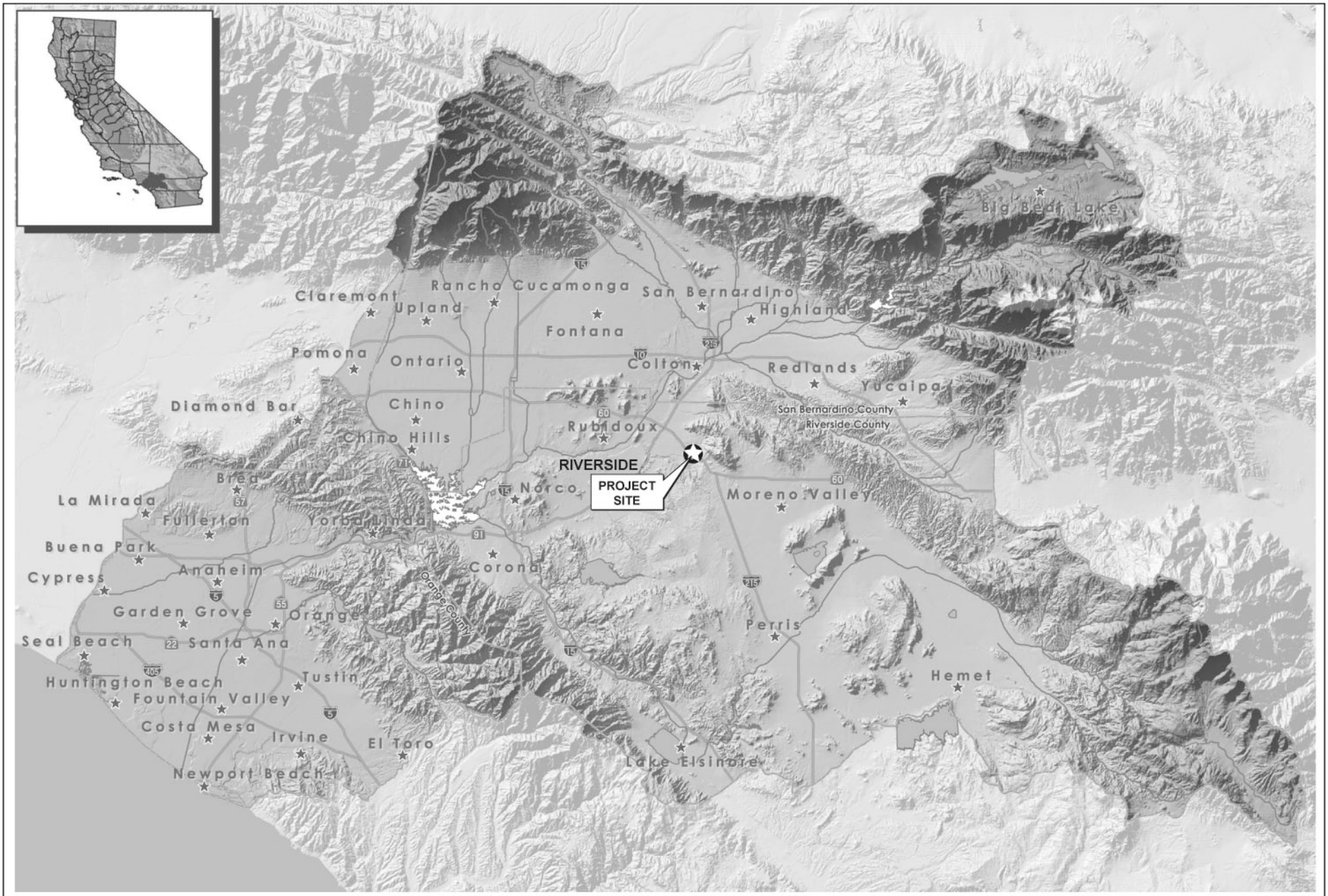

FIGURE **4.8-4**

Santa Ana River Watershed

10537-00

Source: SAWPA

UC Riverside

Not to Scale

EIP ASSOCIATES

Groundwater

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.

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. Nitrates in groundwater extracted by the City of Riverside have an average nitrate concentration of 21 parts per million (ppm), with a range from 15 ppm to 26 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 2002).

4.8.3 Regulatory Framework

Federal

Clean Water Act

The Clean Water Act (CWA), which includes the 1977 amendments to the Federal Water Pollution Control Act of 1972 (United States Code, Title 33), was designed to restore and maintain the chemical, physical, and biological integrity of the waters of the United States. The CWA also directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. Other provisions of the CWA include Section 208, which authorizes the preparation of waste treatment management plans, and Section 319, which mandates specific actions for the control of pollution from nonpoint sources. The EPA has delegated responsibility for implementation of portions of the CWA to the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Board (RWQCB), including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program.

Section 303 of the CWA requires states to adopt water quality standards for all surface water of the United States. Section 304(a) requires the EPA to publish water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be

expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where narrative criteria are needed to supplement numerical standards.

Section 303(c)(2)(b) of the CWA requires states to adopt numerical water quality standards for toxic pollutants for which EPA has published water quality criteria and which reasonably could be expected to interfere with designated uses in a water body. On May 18, 2000, the EPA published the California Toxics Rule (CTR) in the Federal Register, adding Section 131.38 to Title 40 of the CFR. On May 22, 2000, the Office of Administrative Law approved, with modifications, the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (Phase 1 of the Inland Surface Waters Plan and Enclosed Bays and Estuaries Plan)*. The Policy establishes implementation procedures for three categories of priority pollutant criteria or water quality objectives. These are (1) criteria promulgated by the EPA in the National Toxics Rule that apply in California; (2) criteria proposed by EPA in the California Toxics Rule; and (3) water quality objectives contained in RWQCB water quality control plans (basin plans).

All projects resulting in discharges, whether to land or water, are subject to Section 13263 of the California Water Code and are required to obtain approval of Waste Discharge Requirements (WDRs) by the RWQCBs. Land and groundwater-related WDRs (i.e., non-NPDES WDRs) regulate discharges of privately or publicly treated domestic wastewater and process and wash-down wastewater. WDRs for discharges to surface waters also serve as NPDES permits, which are further described below.

NPDES Permits

The NPDES permit system was established in the CWA to regulate both point source discharges (a municipal or industrial discharge at a specific location or pipe) and nonpoint source discharges (diffuse runoff of water from adjacent land uses) to surface waters of the United States. For point source discharges, each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge; however, according to EH&S, the campus is not considered a point source for regulatory purposes and is not subject to WDRs

For nonpoint source discharges, the NPDES program establishes a comprehensive stormwater quality program to manage urban stormwater and minimize pollution of the environment to the maximum extent practicable (MEP). The NPDES program consists of (1) characterizing receiving water quality, (2) identifying harmful constituents, (3) targeting potential sources of pollutants, and (4) implementing a Comprehensive Stormwater Management Program.

The reduction of pollutants in urban stormwater discharge to the MEP through the use of structural and nonstructural BMPs is one of the primary objectives of the water quality regulations. BMPs typically used to manage runoff water quality include controlling roadway and parking lot contaminants by installing oil and grease separators at storm drain inlets, cleaning parking lots on a regular basis, incorporating peak-

flow reduction and infiltration features, such as grass swales, infiltration trenches, and grass filter strips into landscaping, and implementing educational programs.

NPDES Phase I (General Construction Activity Stormwater Permit)

Phase I of the NPDES Program addresses stormwater runoff from "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater; construction activities disturbing five acres of land or greater; and ten categories of industrial activities. With respect to the disturbance of five acres of land or greater from construction activities, the SWRCB issued one Statewide General Construction Activity Stormwater Permit (on August 20, 1992) to apply to all construction activities (on sites greater than five acres). Landowners are responsible for obtaining and complying with the permit, but may delegate specific duties to developers and contractors by mutual consent. For construction activities, the permit requires landowners, or their designated agent, to do the following:

- Eliminate or reduce nonstormwater discharges to stormwater systems and other waters of the United States
- Develop and implement a Stormwater Pollution Prevention Plan
- Perform inspections of stormwater control structures and pollution prevention measures

The only component of Phase I of the NPDES Program that applies to UCR is disturbance of 5 acres of land or greater, which addresses stormwater quantity and/or quality issues.

A Stormwater Pollution Prevention Plan (SWPPP) prepared in compliance with the permit describes the site, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of post-construction sediment and erosion control measures and maintenance responsibilities, and nonstormwater management controls. Dischargers are also required to inspect construction sites before and after storms to identify stormwater discharge from construction activity, and to identify and implement controls where necessary.

NPDES Phase II

New NPDES Phase II stormwater regulations, which became effective in March 2003, cover MS4s in urbanized areas (not covered under Phase I) and reduce the area of construction sites that are subject to regulation from 5 acres to 1 acre. The UCR campus is subject to the NPDES Phase II regulations.

Under Phase II regulations, permittees must implement a Stormwater Management Program that addresses six minimum control measures, including (1) public education and outreach; (2) public participation/involvement; (3) illicit discharge detection and elimination; (4) construction site stormwater runoff control for sites greater than one acre; (5) post-construction stormwater management in new development and redevelopment; and (6) pollution prevention/good housekeeping for operations. These control measures will typically be addressed by developing BMPs. On March 10, 2003, UCR filed an application for coverage under an individual NPDES stormwater permit with the Santa Ana Regional Water Quality Control Board (SARWQCB), which included a Stormwater

Management Plan (SWMP) for the UCR campus, in compliance with the Phase II regulations. The SWMP submitted to the SARWQCB was prepared in compliance with Environmental Protection Agency Phase II National Pollutant Discharge Elimination System requirements.

While UCR has already filed for an individual NPDES stormwater permit and submitted its SWMP to the SARWQCB, the agency has not issued the permit or approved the SWMP at this point in time. However, since the federal Environmental Protection Agency Phase II stormwater regulations required UCR to apply for a NPDES permit by March 2003 and develop a SWMP, the UCR campus is moving forward with its current SWMP in the interim while awaiting direction from the SARWQCB.

State

Responsibility for the protection of water quality in California rests with the SWRCB and nine RWQCBs. The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and State water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the State (including both surface and groundwaters) and directs the RWQCB to develop regional Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative. The basin plans serve as master policy documents that describe the legal, technical, and programmatic bases of water quality regulation in the nine designated hydrologic regions of California. Primary components of the basin plans include the following:

- A statement of beneficial water uses that will be protected by the Regional Boards
- The water quality objectives needed to protect the designated beneficial water uses and to prevent nuisances
- The strategies and time schedules for achieving water quality goals

The *Water Quality Control Plan (Basin Plan) for the Santa Ana Region* was last updated in 1995 (Santa Ana Regional Board, 1995), although individual issues are addressed through a triennial review process. The Basin Plan indicates that the Santa Ana Regional Board will implement a phased approach to attain water quality objectives in waters that receive stormwater discharges from urban areas and certain industrial and construction activities. Entities subject to NPDES permits must complete the implementation of technically and economically feasible control measures to reduce pollutants in stormwater to the maximum extent practical (MEP). If this first phase does not result in the attainment of water quality objectives, the Regional Board may require implementation of additional control measures.

In cases where the Basin Plan does not contain a standard for a particular pollutant, other criteria are used to establish a standard. Other criteria may be applied from SWRCB documents (e.g., the Inland

Surface Waters Plan and the Pollutant Policy Document) or from water quality criteria developed under Section 304(a) of the Clean Water Act.

Santa Ana Regional Water Quality Control Board

The SARWQCB regulates surface water quality in Santa Ana River watershed via the Basin Plan. The SARWQCB prepares (and updates) the 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 Basin Plan.

The SARWQCB also issues NPDES permits that regulate the discharge of stormwater from municipal separate stormwater sewer systems that serve populations of 100,000 or greater. On October 25, 2002, the Santa Ana Regional Water Quality Control Board issued an NPDES municipal stormwater permit (No. CAS618033) for the County of Riverside, which also includes the incorporated cities of Beaumont, Calimesa, Canyon Lake, Corona, Hemet, Lake Elsinore, Moreno Valley, Norco, Perris, Riverside, San Jacinto and Murrieta. However, the permit acknowledges that the permittees

> …lack legal jurisdiction over stormwater discharges into their respective MS4s from agricultural activities, California and federal facilities, utilities and special districts, Native American tribal lands, wastewater management agencies and other point and non-point source discharges otherwise permitted by or under the jurisdiction of the Regional Board. (SARWQCB 2002)

As a State facility, the UCR campus is not subject to the requirements of the NPDES stormwater permit issued to the County and other co-permittees, including the City of Riverside; however, as previously mentioned, UCR is subject to the NPDES Phase II requirements that address construction activities of greater than 1 acre and is subject to the Phase II NPDES program.

Local

County of Riverside

The County of Riverside has established Ordinance No. 754.1, the Riverside County Stormwater/Urban Runoff Management and Discharge Controls Ordinance. The intent of this ordinance is to protect and enhance the water quality of County watercourses, water bodies, groundwater, and wetlands in a manner pursuant to and consistent with the federal Clean Water Act. The ordinance establishes a series of management and discharge controls that are intended to reduce pollutants in stormwater, eliminate illicit connections/discharges, and regulate nonstormwater discharges to the storm drain system. As the UCR campus will be subject to the provisions of an NPDES Phase II stormwater permit issued to UCR by the Santa Ana Regional Water Quality Control Board (or a subsequent Statewide general permit adopted by the State Water Resources Control Board), it is not subject to the provisions of Riverside County Ordinances related to stormwater discharge.

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.

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

Methodology

As a conceptual land use plan, the LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects or the location of those projects. By comparing existing land uses to the those that are proposed under the 2005 LRDP, potential impacts that would result from LRDP implementation were evaluated, including the potential to violate any water quality standards or waste discharge requirements, deplete groundwater supplies or interfere with groundwater recharge, alter the existing drainage pattern of the area that would result in substantial erosion or siltation, increase the rate or amount of surface runoff 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, place housing or other structures within a 100-year flood hazard area, or to expose people or structures to risk of loss, injury or death involving flooding.

Impacts to surface and groundwater quality were analyzed by reviewing existing groundwater and surface water quality literature as it pertains to the campus, identifying existing on-campus ground and surface waters, including the depth to groundwater, and evaluating existing and potential sources of water quality pollutants based on the types of land uses and operational activities that occur or could occur on campus. Additionally, the applicability of federal and State regulations, ordinances, and/or standards to surface and groundwater quality of the campus and subsequent receiving waters was assessed. Potential impacts from implementation of the 2005 LRDP were determined by evaluating the potential of additional development to exceed the thresholds of significance outlined below.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on hydrology or water quality if it would do any of the following

- 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
- 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
- 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 that 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
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects[18]
- Otherwise substantially degrade water quality
- Place housing or other structures within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary, Flood Insurance Rate Map or other flood hazard delineation map
- Place within a 100-year flood hazard area structures that 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
- Expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to Be Significant related to hydrology and water quality; therefore, all potential impacts are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project violate any water quality standards or waste discharge requirements?

Impact 4.8-1 **Implementation of the 2005 LRDP would not violate existing water quality standards or waste discharge requirements. With**

[18] This threshold is not included in Appendix G and was added to specifically address the environmental effects on hydrology and water quality resulting from the potential construction of new stormwater drainage facilities associated with the 2005 LRDP.

implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, this impact would be *less than significant*.

For the purposes of this analysis, effects from violation of water quality standards, waste discharge requirements, or degradation of water quality would be considered significant if discharges associated with the project would (1) create pollution, contamination, or nuisance as defined in Section 13050(k) through (m)[19] of the California Water Code or (2) cause regulatory standards, as defined in the applicable NPDES stormwater permit number or Water Quality Control Plan (Basin Plan) for the Santa Ana Region for the receiving water body, to be exceeded. Alterations to the existing drainage pattern of the site or area that would result in substantial additional polluted runoff as, defined by Water Code Section 13050(k) through (m), would be considered significant if the project affects the rate or changes in the direction of movement of existing contaminants or expands the area affected by contaminants.

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures that would result in the conversion of open space into the site of academic buildings and related support facilities.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategy is relevant to reducing erosion during construction activities:

PS Conservation 2 — *Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.*

During the planning horizon for the 2005 LRDP, the campus will also continue to implement the following existing campus Program and Practice that would reduce or avoid potential impacts associated with water quality standards or waste discharge requirements:

PP 4.8-1 — *The campus will continue to comply with all applicable water quality requirements established by the SARWQCB.*

(This is identical to Utilities PP 4.15-5.)

[19] This section of the water code provides definitions for various terms used to discuss water quality, as follows:
(k) "Contamination" means an impairment of the quality of the waters of the State by waste to a degree that creates a hazard to the public health through poisoning or through the spread of disease. "Contamination" includes any equivalent effect resulting from the disposal of waste, whether or not waters of the State are affected.
(l) (1) "Pollution" means an alteration of the quality of the waters of the State by waste to a degree which unreasonably affects either of the following:
(A) The waters for beneficial uses.
(B) Facilities that serve these beneficial uses.
(2) "Pollution" may include "contamination."
(m) "Nuisance" means anything which meets all of the following requirements:
(1) Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
(2) Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
(3) Occurs during, or as a result of, the treatment or disposal of wastes.

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills Residence Halls complex, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation and open space on the West Campus (north of Martin Luther King Boulevard).

As noted in the setting above, the campus is not considered a point-source for regulatory purposes and is not subject to WDRs. In addition (as discussed in Section 4.7, Hazards and Hazardous Materials), no hazardous wastes are discharged into the sewer or storm drainage system on campus.

Development under the 2005 LRDP could result in an increase of impermeable surface area associated with new buildings and additional pavement, which would result in additional runoff (e.g., stormwater) that may contain stormwater contaminants that are typical of urbanized areas. However, the constituent pollutants entering the campus and City storm drain systems during the planning horizon of the 2005 LRDP would not change in character as a result of implementation of the 2005 LRDP: the campus proposes to develop additional academic, residential, and support uses that are substantially similar to existing campus uses and which would not contribute different types of pollutants than those now generated (which do not violate existing water quality standards). Note that the potential impacts resulting from accident or upset conditions associated with the transportation or use of hazardous materials are separately addressed in Impact 4.7-1 and Impact 4.7-3 (Hazards and Hazardous Materials).

In addition, the campus currently complies with NPDES Phase I requirements (general construction permit) and Phase II requirements through preparation and implementation of a campus stormwater management plan. Compliance with these statutes and regulations would ensure that campus stormwater quality is not substantially degraded by requiring discharges to continue to meet the requirements of the SWRCB and RWQCB, and by preventing polluted discharges from leaving construction sites.

With implementation of the identified LRDP Planning Strategy and continued implementation of PP 4.8-1, implementation of the 2005 LRDP would not violate any water quality standards or waste discharge requirements, and this impact would be *less than significant*.

Threshold	Would the project 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?

Impact 4.8-2 **Implementation of the 2005 LRDP would not substantially deplete groundwater supplies or interfere with groundwater recharge. With implementation of the relevant LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which would increase demand for potable water and increase the land area covered by impervious surfaces.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies would promote water conservation, which would reduce demands on groundwater:

PS Conservation 5 — *Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.*

In addition, continued implementation of existing campus Programs and Practices would also promote water conservation:

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 over time

(v) Prohibit using water as a means of cleaning impervious surfaces

(vi) Install water-efficient irrigation equipment to local evaporation rates 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).)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills Residence Halls complex,

redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking facilities at locations around the perimeter of campus, and development of new academic, housing, recreation and open space on the West Campus (north of Martin Luther King Boulevard).

The increase in occupied building space would increase demand for potable water that could indirectly increase demand for groundwater, as the campus is supplied domestic water by the City of Riverside, which utilizes groundwater wells for potable water. As discussed in Section 4.15 (Utilities), implementation of the 2005 LRDP is anticipated to increase campus demand for potable water by approximately 1.9 million gallons per day (mgd). The provision of additional water to the UCR campus, which could include groundwater, would not require water supplies in excess of existing entitlements and resources or result in the need for new or expanded entitlements (as discussed more fully in Impact 4.15-2 in Section 4.15 [Utilities]), as existing and future water supply sources would exceed demand. The campus would continue to implement PP 4.8-2(a) through PP 4.8-2(c) to promote conservation measures that would reduce demand for potable water. In addition, PS Conservation 5 requires compliance with Title 24 requirements, which includes the California Plumbing Code and its water conservation measures. Therefore, implementation of the 2005 LRDP would not substantially deplete groundwater supplies.

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 sub basin. 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. Therefore, the addition of impervious surfaces as a result of implementation of the 2005 LRDP would not substantially interfere with groundwater recharge.

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 SARWQCB related to discharge of groundwater, and operational dewatering is not anticipated during the 2005 LRDP planning horizon. Any such extraction of groundwater would be localized and would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge.

With implementation of the LRDP Planning Strategy identified above and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP 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*.

Threshold	Would the project 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 that would result in substantial erosion or siltation on or off site?

Impact 4.8-3 **Implementation of the 2005 LRDP would not substantially alter drainage patterns on campus and would not result in substantial erosion or siltation on or off site. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in construction of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, which could alter drainage patterns and expose soils to erosion during construction, which could result in siltation on or off site.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including the one described above under Impact 4.8-1, which would minimize the land area subject to development, with *Conservation 2*, the campus would preserve and protect *Natural* and *Naturalistic* open spaces areas, and reduce the potential changes in drainage patterns in these areas. The following would also apply:

PS Land Use 2 *In order to achieve 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 Land Use 3 *Maintain the teaching and research fields on the West Campus south of Martin Luther King Boulevard.*

PS Open Space 1 *Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*

PS Open Space 2 *Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration.*

PS Open Space 3 *In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.*

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.*

PS Open Space 5 — *Retain the Carillon Mall as a major campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*

PS 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.*

PS Conservation 2 — *Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.*

PS Conservation 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.*

In addition, continued implementation of existing campus Programs and Practices would also promote preservation of site features, minimize disturbance of *Natural* and *Naturalistic* open spaces, controlling erosion at construction sites, and assess stormwater drainage capacity in conjunction with the design of individual projects. These programs and practices, while initially designed to address biological resources, hydrology, and air quality, would also limit development in potentially erosive areas and reduce dust, thereby minimizing site erosion:

PP 4.8-3(a) — *To reduce impacts to the Natural Open Space Reserve area:*

(i) If any construction is proposed within the Open Space Reserve, conduct surveys for threatened and endangered species at an appropriate time of year. If these species are located in this area, the site or sites shall be protected from damage by either protective fencing or some other means of restricting access.

(ii) Landscaping around development areas adjacent to the Open Space Reserve shall emphasize native or historically significant plant material that provides wildlife value and a sensitive transition from developed areas to Natural open spaces. A qualified native landscape specialist shall be retained to develop an appropriate native landscape plan for the development areas.

(This is identical to Biological Resources PP 4.4-1(a) and Aesthetics 4.1-2(c).)

PP 4.8-3(b) — *To reduce disturbance of Natural and Naturalistic Open Space areas:*

(i) Unnecessary driving in sensitive or otherwise undisturbed areas shall be avoided. New roads or construction access roads would not be created where adequate access already exists.

(ii) Removal of native shrub or brush shall be avoided, except where necessary.

(iii) Drainages shall be avoided, except where required for construction. Limit activity to crossing drainages rather than using the lengths of drainage courses for access.

(iv) Excess fill or construction waste shall not be dumped in washes.

(v) Vehicles or other equipment shall not be parked in washes or other drainages.

(vi) Overwatering shall be avoided in washes and other drainages.

(vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc.

(This is identical to Aesthetics PP 4.1-2(d) and Biological Resources PP 4.4-1(b).)

PP 4.8-3(c)

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 nontoxic 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 are to be covered or should 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

(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

(This is identical to Air Quality PP 4.3-2(b) and Geology PP 4.6-2(a).)

PP 4.8-3(d): *In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):*

(i) Public education and outreach on stormwater impacts

(ii) Public involvement/participation

(iii) Illicit discharge detection and elimination

(iv) Pollution prevention/good housekeeping for facilities

(v) Construction site stormwater runoff control

(vi) Post-construction stormwater management in new development and redevelopment

(This is identical to Biological Resources PP 4.4-2(b) and Geology and Soils PP 4.6-2(b).)

PP 4.8-3(e) *Prior to the time of design approval, the campus will evaluate each specific project to determine if the project runoff would exceed the capacity of the existing storm drain system. If it is found that the capacity would be exceeded, one or more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding:*

(i) Multi-project stormwater detention basins

(ii) Single-project detention basins

(iii) Surface detention design

(iv) Expansion or modification of the existing storm drain system

(v) Installation of necessary outlet control facilities

Some of these solutions identified in PP 4.8-3(e) would have their own CEQA or site impacts, which would be subject to review at time of design approval.

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, which could include infill development in the academic core of the campus on the East Campus, expansion of the academic core on the East Campus, additional housing and recreational facilities east of the Pentland Hills Residence Halls complex, redevelopment of the Canyon Crest Family Housing and Bannockburn sites, development of parking

facilities at locations around the perimeter of campus, and development of new academic, housing, recreation and open space on the West Campus (north of Martin Luther King Boulevard). Development of new facilities or redevelopment of existing building sites at each of these locations would involve site clearance, grading, and other earthmoving activities, which could alter site drainage patterns and subject exposed soils to erosion by water or wind.

Alteration of Drainage Patterns

Depending on the placement of new structures and the extent of impervious surfaces, surface drainage patterns at the location of new development would change. Development within or adjacent to existing arroyos could result in modification of drainage channels, which could alter drainage patterns.

Implementation of LRDP Planning Strategies *Land Use 2* and *3*, *Open Space 1* through *5*, and *Conservation 1* through *3*, would ensure that areas of the campus subject to disturbance would be limited and disturbance on building sites would be minimized. In addition, continued implementation of PP 4.8-3(a) and PP 4.8-3(b) would further protect and reduce disturbance of *Natural* and *Naturalistic* open space areas, including the southeast hills and arroyos.

On the East Campus, infill development within the academic core would result in the development of new buildings and the replacement of existing structures. The replacement of existing buildings, or the development of new structures on sites that already developed with impervious surfaces, would not substantially alter existing drainage patterns. Infill development on sites that are currently landscaped open space would increase the extent of impervious surfaces at that location. However, because these areas already served by stormwater drainage facilities, development of new structures would not substantially alter existing drainage patterns. Continued implementation of PP 4.8-3(e) would require an assessment of the capacity of existing stormwater drainage facilities serving the site of proposed development and improvements, as necessary, to accommodate additional stormwater runoff and reduce potential erosion from surface flows and determine if the project runoff would exceed the capacity of existing infrastructure.

Expansion of the academic core on the East Campus would result in the development of new academic buildings on the lawn area of the Lower Intramural Fields and the lawn area north of University Avenue (west of Canyon Crest Drive). The Lower Intramural Fields are already served by stormwater drainage facilities, and the development of new structures would be accompanied by extension or improvement of these facilities as appropriate. The lawn area north of University Avenue currently drains via surface flow to the Gage Basin. Continued implementation of PP 4.8-3(e) would require the installation of new drainage features to direct flow into the adjacent Gage Basin.

Development of the West Campus would result in the development of new academic, housing, recreation and open space north of Martin Luther King Boulevard. Of the approximately 236 acres on the West Campus north of Martin Luther King Boulevard, approximately 31 acres is already developed (with UNEX, Human Resources, Highlander Hall, the International Village, and Parking Lot 30). Implementation of the 2005 LRDP would result in the development of approximately 125 acres of

existing agricultural and teaching fields into the site of academic and support facilities, while approximately 43 acres would be developed as landscaped open space and 37 acres would remain as a Campus Reserve (which it is assumed would not be developed during the planning horizon of the 2005 LRDP). Development of approximately 125 acres of agricultural teaching and research fields would modify drainage patterns in this area and increase runoff.

As noted in the setting, most of the West Campus area north of Martin Luther King Boulevard drains via surface flows in a southwesterly direction towards Martin Luther King Boulevard, where it enters a 42-inch drain. Some additional runoff drains along the northern edge of this area towards the 66-inch drain on Cranford Avenue. The proposed development scenario for the West Campus includes the development of ornamental drainage swales located along the edge of the east/west streets in this area including the north side of Martin Luther King Boulevard. Runoff from new development would be conveyed via gravity to the swales, which would retain the stormwater and promote infiltration of runoff. As noted in the setting, most of the West Campus is underlain with Class C soils, which have intermediate permeability. The drainage swales would be interconnected with a series of north/south pipes that would convey final discharge from the southwest corner of the developed area into the 42-inch city-owned storm drain in Chicago Avenue. The 2005 LRDP identifies a design criterion for future projects to retain the flows from a 10-year storm event greater than 287 cfs in the drainage swales, which is the current capacity of the storm drain on Martin Luther King Boulevard. With implementation of this design concept, a substantial portion of stormwater runoff would be retained on site. Connections to the existing storm drain network would convey flows from larger events.

Erosion of Soils

Construction of approximately 7.1 million gsf of new academic buildings and related support facilities would subject exposed soils to erosion by water or wind during site clearance, grading and excavation of the site, and prior to the installation of new landscaping.

As discussed in the Section 4.6.2 (Existing Conditions, Geology and Soils), the Monserate, Arlington, Hanford, and Buren soil series generally underlie the campus. Erosion hazards from these soils range from slight to moderate on the West Campus, and from slight to moderate on most of the East Campus, except for areas in the southeast hills, where the erosion potential is moderate to high.

Earth-disturbing activities associated with construction would be temporary and erosion effects would depend largely on the areas excavated, the quantity of excavation, and the length of time soils are subject to conditions that would be affected by erosion processes. 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.

LRDP Planning Strategy *Conservation 2*, described above under Impact 4.8-2, specifies that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. Continued

implementation of PP 4.8-3(c), would require continued compliance with SCAQMD Rule 403—Fugitive Dust during construction, which would stabilize soils and prevent erosion through the reduction of dust generation by up to 85 percent, as discussed in Impact 4.3-2 in Section 4.3 (Air Quality). Continued implementation of PP 4.8-3(d) would require continued compliance with the provisions of the Statewide General Construction Activity Stormwater Permit through the UCR Stormwater Management Plan, which specifies the implementation of Best Management Practices. All of these measures would reduce potential construction-related erosion of soils by wind and water.

With implementation of the identified LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP 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*.

Threshold	Would the project 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 that would result in flooding on or off site?

Impact 4.8-4 **Implementation of the 2005 LRDP would not substantially alter site drainage patterns or substantially increase the rate or amount of surface runoff and would not result in flooding either on or off site. With implementation of the relevant Program and Practice, this impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus. As discussed above under Impact 4.8-3, implementation of the 2005 LRDP would not substantially alter the existing drainage patterns on the campus. Development of new buildings and other facilities during the planning horizon of the 2005 LRDP would increase the extent of impervious surfaces on campus and increase stormwater runoff on the UCR campus.

As noted in the setting, the East Campus is generally underlain with Class C and Class D soils, with intermediate to low permeability, while the West Campus is generally underlain with Class C soils, with intermediate permeability. To the extent that development results in increased impervious surfaces, a substantial increase in runoff is not anticipated, as existing soil conditions (with low to intermediate permeability) currently results in runoff from undeveloped sites. In addition, as noted above in the discussion of Impact 4.8-3, areas of the campus developed as landscaped open space are already served by storm drain facilities.

An analysis of the potential for implementation of the 2005 LRDP to result in increases in stormwater runoff analyzed the proposed LRDP land use plan and disaggregated the campus into 144 parcels and assigned a percent impervious cover for current and future land uses (ranging from 5 percent for open space, to 50 percent for academic and support uses and 95 percent for parking). Using the Rational

Method[20], changes in runoff volumes that would result from each parcel were estimated, assuming a rainfall intensity of 2.2 inches per hour for a 100-year storm event. The results of this analysis indicate that of the approximately 457 acres on the UCR campus that could be subject to development (including infill development and redevelopment of existing sites): runoff volumes would decrease from approximately 111 acres, no change in runoff volume would occur from approximately 240 acres, and runoff would increase from approximately 107 acres (PWA 2002).

Increases in runoff volumes are anticipated at the Lower Intramural Fields and the lawn area north of University Avenue (west of Canyon Crest Drive), where new academic buildings would replace existing lawn areas. Development of new housing (and associated parking) in the area east of the Pentland Hills Residence Halls would also increase runoff, as this area is currently undeveloped (although no increase in runoff would be anticipated for those areas that would be developed as recreational playing fields). Development of new parking facilities at the campus perimeter would also increase runoff from those sites (not already developed as parking lots), including the southeast corner of Canyon Crest Drive and Blaine Street and the area between Canyon Crest Drive and the I-215/SR-60 freeway, north of Martin Luther King Boulevard. The development of academic, parking, housing, and support facilities on the West Campus would also increase runoff volumes from those areas.

As noted in the setting, most of the West Campus area north of Martin Luther King Boulevard currently drains via surface flows in a southwesterly direction towards Martin Luther King Boulevard. The proposed development scenario for the West Campus includes the development of ornamental drainage swales located along the east/west streets in this area (including Martin Luther King Boulevard). Runoff from new development would be conveyed via gravity to the swales, which would retain the stormwater and promote infiltration of runoff. As noted in the setting, most of the West Campus is underlain with Class C soils, which have intermediate permeability. The drainage swales would be interconnected with a series of north/south pipes that would convey final discharge from the southwest corner of the developed area into the 42-inch city-owned storm drain in Chicago Avenue. The 2005 LRDP identifies design criteria to retain the flows from a 10-year storm event (greater than 287 cfs) in the drainage swales, which is the current capacity of the storm drain on Martin Luther King Boulevard. With implementation of this design concept, a substantial portion of stormwater runoff would be retained on site. Connections to the existing storm drain network would convey flows from larger events. Continued implementation of PP 4.8-3(e), described above under Impact 4.8-3, would require the assessment of existing stormwater drainage facilities during project development and improvements, as necessary, to accommodate additional stormwater runoff.

With continued implementation of existing campus Programs and Practices, implementation of the 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*.

[20] The Rational Method is a widely used technique for estimating peak discharge from an area using rainfall intensity, basin (or area) size, and a runoff coefficient, which is a function of land use, soil cover (e.g., percent impervious) and slope.

Threshold	Would the project create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Impact 4.8-5 **Implementation of the 2005 LRDP would not create runoff that would exceed the capacity of existing storm drain systems or provide substantial sources of polluted runoff. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities that would increase the extent of impervious surfaces and increase stormwater runoff on the UCR campus. As discussed above under Impact 4.8-4, a hydrologic analysis of development proposed under the 2005 LRDP indicated that of the approximately 457 acres subject to development (including infill development and redevelopment of existing sites), runoff volumes would decrease from approximately 111 acres, no change in runoff volume would occur from approximately 240 acres, and runoff would increase from approximately 107 acres. Those locations at which runoff would increase could result in the discharge of stormwater that exceeds the capacity of existing storm drain systems.

Continued implementation of PP 4.8-3(e), described above under Impact 4.8-3, would require the assessment of existing stormwater drainage facilities during project development and improvements, as necessary, to accommodate additional stormwater runoff. In addition, the 2005 LRDP identifies design criteria to retain the flows from a 10-year storm event (greater than 287 cfs) in the drainage swales, which is the current capacity of the storm drain on Martin Luther King Boulevard. With implementation of this design concept, a substantial portion of stormwater runoff would be retained on site within the West Campus.

Implementation of the 2005 LRDP would result in the development of new academic buildings, support facilities and parking at locations that are currently undeveloped (e.g., agricultural teaching and research fields) or are developed as landscaped open spaces or existing building sites. The development of new impervious surfaces would contribute runoff that contains urban stormwater contaminants, including grease, oils, heavy metals, fertilizers, and pesticides. Continued implementation of existing campus PP 4.8-3(c), described above under Impact 4.8-3, would require continued compliance with SCAQMD Rule 403—Fugitive Dust during construction, and continued implementation of existing campus PP 4.8-3(d), also described above under Impact 4.8-3, would require continued compliance with the UCR Stormwater Management Plan to implement Best Management Practices in compliance with NPDES requirements during project construction, which would reduce potential erosion from construction sites.

With continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not create or contribute runoff water 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*.

Threshold	Would the project require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Impact 4.8-6 **Implementation of the 2005 LRDP would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. This impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities that would increase the extent of impervious surfaces and increase stormwater runoff on the UCR campus. As discussed above under Impact 4.8-4, a hydrologic analysis of development proposed under the 2005 LRDP indicated that of the approximately 457 acres subject to development (including infill development and redevelopment of existing sites), runoff volumes would decrease from approximately 111 acres, no change in runoff volume would occur from approximately 240 acres, and runoff would increase from approximately 107 acres. Those locations at which runoff would increase may require the construction of new stormwater conveyance systems or expansion of existing stormwater drainage systems. Refer to Figure 4.8-3 for illustration of major storm drainages on campus.

Increases in runoff volumes are anticipated at the Lower Intramural Fields and the lawn area north of University Avenue (west of Canyon Crest Drive), where new academic buildings would replace existing lawn areas. Development of new housing (and associated parking) in the area east of the Pentland Hills Residence Halls would also increase runoff, as this area is currently undeveloped (although no increase in runoff would be anticipated for those areas that would be developed as recreational playing fields). Development of new parking facilities at the campus perimeter would also increase runoff from those sites (not already developed as parking lots), including the southeast corner of Canyon Crest Drive and Blaine Street and the area between Canyon Crest Drive and the I-215/SR-60 freeway, north of Martin Luther King Boulevard. With the exception of the area east of the Pentland Hills Residence Halls, all of these potential development sites are already served by existing storm drain systems. Thus, development of these sites would result in extension of existing storm drain systems to convey runoff from those locations. It is anticipated that these stormwater conveyances would be accomplished via the installation of underground pipes or culverts, which would require minor trenching for installation. Development of the area east of Pentland Hills would require the installation of a new storm drain system in the area, which would convey storm runoff into the arroyo located between the Pentland Hills and Lothian Residence Halls (which is a tributary to the University Arroyo). Installation of a new storm drainage system in this area would include both aboveground elements, such as curbs, drains, and catch basins, and underground pipes to convey flows to the arroyo.

The development of academic, parking, housing, and support facilities on the West Campus would also increase runoff volumes from those areas. The proposed development scenario for the West Campus includes the development of ornamental drainage swales located along the edge of the east/west streets in this area (including Martin Luther King Boulevard). Runoff from new development would be conveyed via gravity to the swales, which would retain the stormwater and promote infiltration of runoff. The drainage swales would be interconnected with a series of north/south pipes that would convey final discharge from the southwest corner of the developed area into the 42-inch City-owned storm drain in Chicago Avenue. The 2005 LRDP identifies design criteria to retain the flows from a 10-year storm event (greater than 287 cfs) in the drainage swales, which is the current capacity of the storm drain on Martin Luther King Boulevard. With implementation of this design concept, a substantial portion of stormwater runoff would be retained on site.

Implementation of the proposed 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. Future development of the West Campus would require the installation of a new storm drain system, comprised of surface drainage swales connected to existing storm drains located along Marin Luther King Boulevard 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 (e.g., linear trenches) 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 Sections 4.1 through 4.15. 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 for the 2005 LRDP. With the incorporation of existing campus Programs and Practices and mitigation measures discussed in other sections of this document 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.

Implementation of the 2005 LRDP would result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which would not cause significant environmental effects, and this impact would be *less than significant*.

Threshold	Would the project otherwise substantially degrade water quality?

Impact 4.8-7 **Implementation of the 2005 LRDP would not otherwise substantially degrade water quality. This impact would be *less than significant*.**

The primary sources of potential water quality degradation have been fully addressed in Impacts 4.8-1, 4.8-3, and 4.8-5, and no other sources of water quality degradation are anticipated in association with implementation of the 2005 LRDP. Implementation of the 2005 LRDP would, therefore, not otherwise substantially degrade water quality, and this impact would be *less than significant*. No mitigation is required.

Threshold	Would the project 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?

Impact 4.8-8 **Implementation of the 2005 LRDP would not place housing within a 100-year flood hazard area. *No impact* would result.**

Implementation of the 2005 LRDP would result in the development of new housing in the area east of the Pentland Hills and Lothian Residence Halls, redevelopment of the Canyon Crest Family Student Housing complex, redevelopment of the Bannockburn Village complex, and development of new housing on the West Campus. As shown on Figure 4.8-2, the portions of the campus that are within a 100-year flood hazard area include areas along the University Arroyo, along Big Springs Road, North Campus Drive, the Lower Intramural Fields, and the Gage Basin north of University Avenue. As discussed in Section 4.8.2 Existing Conditions and summarized in Impact 4.8-9 below, the University Flood Control and Enhancement Project is being considered to reduce the extent of the 100-year floodplain along the University Arroyo. It is unknown at this time if the Regional Islander Park Project will be implemented by the City of Riverside. The extent of the 100-year floodplain is expected to decrease as a result of implementation of flood control improvements by the campus along the University Arroyo. In addition, areas adjacent to the Box Springs Arroyo, in the agricultural teaching and research fields south of Martin Luther King Boulevard are also within the 100-year flood hazard area, although no development is anticipated in these areas. None of the areas proposed to development of new housing or redevelopment of existing housing sites are located within the area of the 100-year flood hazard zone. Therefore implementation of the 2005 LRDP would not place housing within a 100-year flood hazard area and *no impact* would result.

Threshold	Would the project place within a 100-year flood hazard area structures that would impede or redirect flood flows?

Impact 4.8-9 **Implementation of the 2005 LRDP would not place structures within a 100-year flood hazard area and development could not impede or redirect flood flows. With implementation of the relevant Program and Practice and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

As discussed above in Impact 4.8-8, and as shown on Figure 4.8-2, the portions of the campus that are currently within a 100-year flood hazard area include areas along the University Arroyo, along Box Springs Road, North Campus Drive, the Lower Intramural Fields and the Gage Basin north of University

Avenue, and areas adjacent to the Box Springs Arroyo, in the agricultural teaching and research fields south of Martin Luther King Boulevard. The campus anticipates development in the Lower Intermural Fields and Parking Lots 10 and 13. The extent of the 100-year floodplain is expected to decrease as a result of implementation of flood control improvements. The initial improvements, referred to as the University Arroyo Restoration & Storm Drain/Flood Control Plan, developed in concept in 1995, were an area solution to potential flooding that would decrease the extent of the University Arroyo 100 year flood plain. Subsequent to this proposal, the Campus explored a partnership with the City of Riverside to develop a regional plan which not only decreased the extent of the flood plain on campus but provided flooding mitigation above and below the campus within the City of Riverside as well as the development/restoration of the undeveloped portion of Islander Park, a City facility, within the 100 year flood plain at the base of the Box Springs Mountains. This project, referred to as the University Arroyo Flood Control and Enhancement Plan and Islander Park Improvements, was approved by the City Council; however, a CEQA lawsuit was filed. The City is pursuing the project, but without the campus's partnership. Consequently, the University is considering a plan similar to the original 1995 plan, referred to as the University Flood Control and Enhancement Project. That plan would include a detention basin at the base of the Botanic Gardens tributary, additional surface channel enlargement including the Glade, and a 6-by-6-foot underground culvert, which will carry stormwater across the fields to the Gage Basin. Refer to Section 4.8.2 Existing Conditions for additional detail on these projects. Assuming improvements are implemented, future development occurring in those areas would be outside of the new 100-year flood hazard zone. Therefore implementation of the 2005 LRDP would not place structures within a 100-year flood hazard area and *no impact* would result.

However, if area improvements are not implemented, portions of campus within the current 100-year flood area could include future development based on the LRDP land use map (Figure 3-5, Project Description). These areas within the current 100-year flood area include the Lower Intramural Fields, Parking Lot 13, and Visitor Lot 10, all of which are identified for future development of academic buildings. This would result in the placement of structures in the 100-year flood hazard area, which could expose people and the structures to hazards associated with flooding, and impede or redirect flood flows, contributing to flood hazards.

Even with continued implementation of PP 4.8-3(e), described above under Impact 4.8-3, structures developed in the area of the Lower Intramural Fields, Parking Lot 13, and Visitor Lot 10 could be exposed to flooding during 100-year or greater storm events, if flood control improvements are not implemented. MM 4.8-9 (a) and MM 4.8-9(b) would reduce impacts associated with flood flows in the 100-year flood hazard area to a less-than-significant level, and these measures would apply only if flood control improvements are not implemented to reduce the extent of the 100-year floodplain of the University Arroyo.

MM 4.8-9(a) *Prior to design approval, the campus will review the plans for all structures to be constructed in the 100-year floodplain for compliance with the following FEMA requirements for nonresidential structures:*

(i) Elevate the lowest floor (including the basement) to or above the base flood level; or

(ii) Together with attendant utility and sanitary facilities, design so that below the base flood level, the structure is watertight with walls substantially impermeable to the passage of water and with structural components having the capability of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

(iii) Require that fully enclosed areas below the lowest floor that are subject to flooding be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for entry and exit of flood waters.

MM 4.8-9(b) *For structures placed within the 100-year floodplain, flood control devices will be designed to direct flows toward areas where flood hazards will be minimal.*

With implementation of MM 4.8-9(a) and MM 4.8-9(b) if flood control improvements are not implemented, the 2005 LRDP would minimize flood risks from the placement of structures within a 100-year flood hazard area, and the placement of structures would not impede or redirect flood flows. This impact would be reduced to a *less-than-significant* level.

Threshold	Would the project expose people or structures to a significant risk of loss, injury, or death involving flooding?

Impact 4.8-10 **Implementation of the 2005 LRDP would alter site drainage patterns but would not expose people or structures to significant risk of loss, injury, or death involving flooding. With implementation of the relevant Program and Practice, this impact would be *less than significant*.**

The dam closest to the UCR campus is Prado Dam, which is located on the Santa Ana River downstream from UCR, and thus poses no risk to the campus. The Seven Oaks Dam is located on the Santa Ana River in the upper Santa Ana Canyon about 8 miles (13 km) northeast of the City of Redlands, approximately 24 miles upstream of the City of Riverside. The U.S. Army Corps of Engineers has not yet released the Seven Oaks Dam Flood Inundation Study. However, the potential for catastrophic failure of the Seven Oaks Dam is considered remote, given the recent completion date (in 1999) and the periodic inspection of the dam by the U.S. Army Corps of Engineers and the State of California. Given the distance between the campus and the Santa Ana River (of more than three miles), the potential for flooding to occur on the UCR campus as a result of a catastrophic failure of the Seven Oaks Dam is remote.

The Santa Ana Pipeline, a component of the State Water Project, conveys water from the Devil Canyon Power Plant to Lake Perris and is located east of the campus along the base of the Box Springs

Mountains. The State of California Department of Water Resources (DWR) operates this pipeline, which is subject to periodic inspection by State authorities and DWR. Although the potential for catastrophic failure of the Santa Ana Pipeline is considered remote, continued implementation of PP 4.8-10 would ensure an appropriate response to flooding hazards in the event of a failure of the pipeline.

PP 4.8-10 *In the event of an emergency, including catastrophic failure of the California State Water Project pipeline, the campus would implement the Emergency Operations Plan.*

The Emergency Operations Plan outlines the policies and procedures that govern UCR's Emergency Management Program. The Emergency Operations Plan facilitates campus preparedness before an emergency and response actions when one does occur.

With continued implementation of PP 4.8-10, implementation of the 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, dam or water supply pipeline, and this impact would be *less than significant*.

Threshold	Would the project expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow?

Impact 4.8-11 **Implementation of the 2005 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of approximately 7.1 million gsf of new academic buildings and related support facilities, which are unlikely to be subject to significant risk of loss, injury, or death involving inundation by seiche or tsunami. However, there is a potential for mudflows in the natural areas of the campus, but development is not proposed to be located on the steep hillsides or in natural open space.

During the planning horizon of the 2005 LRDP, development of the campus would be guided by a range of LRDP Planning Strategies, described above under Impact 4.8-2. Implementation of LRDP Planning Strategies *Open Space 1* and *2* would require that southeast hills be preserved, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for erosion, screening, and restoration. Implementation of LRDP Planning Strategy *Conservation 1*, described above under Impact 4.8-2, specifies that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible.

In addition, continued implementation of PP 4.8-3(a) and PP 4.8-3(b), described above under Impact 4.8-3, would further protect and reduce disturbance of *Natural* and *Naturalistic* open space areas, including the southeast hills and arroyos.

The potential for on-campus development to be affected by a seiche or tsunami is considered extremely remote, given the inland location of the campus and distance to any open water bodies. A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin, such as a reservoir, harbor, lake, or storage tank. A tsunami is a great oceanic wave, commonly referred to as a tidal wave, produced by a significant undersea disturbance such as tectonic displacement of the sea floor associated with large, shallow earthquakes. There are several small reservoirs located on the UCR campus, including several ponds that are used to store water for the agricultural teaching and research fields. However, these reservoirs are either covered, or too small to pose a risk from seiche. Since the UCR campus is located in an inland area, the potential for tsunamis to affect the site is nonexistent.

The potential for mudflows to affect campus development is limited to areas immediately adjacent to the southeast hills, or within the existing on-campus arroyos. In these areas, alluvial materials and surficial soils developed on bedrock may be susceptible to failure, particularly if runoff were concentrated onto slopes. Implementation of LRDP Planning Strategies *Open Space 1* and *2* would require that southeast hills be preserved, no major facilities be allowed (except for sensitively sited utility projects), vehicular and pedestrian access be limited, and that native plant materials be used for erosion, screening, and restoration. Implementation of LRDP Planning Strategy *Conservation 1*, described above under Impact 4.8-2, specifies that native habitat, remnant arroyos, and mature trees be preserved to the extent feasible. In addition, continued implementation of PP 4.8-3(a) and PP 4.8-3(b) would further protect and reduce disturbance in the *Natural* Open Space Reserve.

With implementation of the identified LRDP Planning Strategies and continued implementation of exiting campus Programs and Practices, implementation of the 2005 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow, and this impact would be *less than significant*.

4.8.5 Cumulative Impacts

The geographic context for the analysis of cumulative hydrology and water quality 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 of off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis). In particular, flood control improvements planned on-campus and potentially in the City are included in the cumulative analysis. These projects are described in Section 4.0, Cumulative Impacts.

Further development in the Upper Santa Ana River Groundwater Basin could affect water quality through an increase in impermeable surfaces and more intensive land uses, thereby increasing the amount of stormwater runoff and common urban contaminants entering the County storm drain system.

Construction of new development in the area could also result in the erosion of soil, thereby cumulatively degrading water quality within the watershed. New development would be required to comply with existing regulations regarding construction practices that minimize risks of erosion and runoff. Regulations include the applicable provisions of Riverside County Ordinance 754.1 (Stormwater/Urban Runoff Management and Discharge Controls), Best Management Practices, compliance with appropriate building permits, and NPDES permits. This would minimize degradation of water quality at project construction sites. Compliance by the campus with applicable SWRCB and RWQCB regulations (PP 4.8-1) would ensure that water quality with respect to the campus is maintained. Impacts would not be cumulatively considerable, and the project would not have a cumulatively considerable contribution to those effects.

Related project development could deplete groundwater supplies or interfere substantially with groundwater recharge. The total growth that would occur under the County of Riverside General Plan would likely require increased reliance on groundwater sources, particularly in western Riverside County, which could result in a reduction in the groundwater table level. Further, as related project development would occur in vacant areas available for groundwater recharge, groundwater recharge could be reduced. The County of Riverside General Plan Program EIR includes policies and mitigation measures to reduce these effects, and impacts will be assessed on a project-by project basis. However, due to the amount of development that could occur in the general area from related projects, impacts would be cumulatively considerable. As stated above, implementation of the 2005 LRDP would not result in the depletion of groundwater supplies, and according to the City of Riverside, water supplies are adequate to serve the campus at full implementation and would, therefore, 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 2005 LRDP would not constitute a substantial interference with groundwater recharge in an area (the campus) that does not substantially recharge the groundwater basin it overlies. The project contribution to groundwater impacts would not be cumulatively considerable, due to the limited effects on campus.

Related project development has the potential to substantially alter the existing drainage pattern of the area, increasing surface runoff and resulting in erosion, siltation, or flooding. As identified in the General Plan EIR, increased development would reduce the distribution and extent of permeable surfaces, increase runoff and flow into streams, and increase non-point source pollutants entering watercourses. While on an individual basis these impacts would not be considerable, when considered in aggregate, the extensive future development throughout the watershed could substantially change drainage patterns in a manner that increases erosion, siltation, and flooding. These impacts would be cumulatively considerable. Campus policies and mitigation measures, including the development of specific hydrologic studies that would require minimization of these effects to the extent feasible would reduce impacts on a project specific basis. Projects would undergo review in accordance with CEQA that would ensure effects on drainage patterns would be minimized to the extent feasible. As described above, development under the 2005 LRDP would result in less-than-significant effects from changes to drainage patterns that

could result in substantial erosion, siltation, or flooding. The project would not have a cumulatively considerable contribution to this impact.

As discussed above, related projects would reduce pervious surfaces and result in new development that would increase the amount of runoff entering the storm drainage system. New projects would each be reviewed at the local level to ensure that the storm drain system could accommodate increased flows from the project. As this review occurs on a project-by-project basis, impacts would not be cumulatively considerable. Implementation of PP 4.8-3(e), described above under Impact 4.8-4, would require an assessment of the capacity of existing stormwater drainage facilities, which would further ensure that runoff from the campus would not exceed the capacity of the existing storm drain system. These measures would ensure that development associated with the 2005 LRDP would not result in a cumulatively considerable contribution to stormwater drainage system capacity.

Related projects could result in or require the construction of new stormwater drainage facilities or the expansion of existing facilities, resulting in significant environmental effects. Future development could occur in previously undeveloped areas, thereby necessitating the expansion or creation of stormwater drainage facilities. Future development would require localized modifications or additions to the existing stormwater drainage system. Effects from these activities could occur. Similar to the proposed project, 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 accumulate. Impacts would not be cumulatively considerable. There would be some improvements to drainage systems to allow development under the 2005 LRDP, and the impacts from these improvements are discussed throughout this EIR. However, 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 contribute to cumulative impacts. The project would not have a cumulatively considerable contribution to this effect.

No other sources of water quality degradation are anticipated in association with implementation of the 2005 LRDP, other than those discussed above. Therefore, the proposed project would not contribute to other cumulative effects on degradation of water quality.

As discussed above, development under the 2005 LRDP, with the incorporation of mitigation measures, Planning Strategies, and Programs and Practices, would not result in any increase in flooding, and would not place housing within a 100-year flood zone. The only areas of the campus within the 100-year flood area that are designated for future development are the Lower Intramural Fields, Parking Lot 13, and Visitor Lot 10, all of which are identified for future development of academic buildings. Flood control improvements proposed by the Campus would improve the conveyance capacity of the storm drain system, and reduce the extent of areas affected by 100-year flows. MM 4.8-9 would ensure that adequate storm drain facilities or other means would be designed for future projects located within the 100-year floodplain areas. If improvements are not implemented by the campus-related projects located within the 100-year flood, the area could also be subject to flooding. Individual project review would ensure

incorporation of measures to reduce the effects of flooding. Impacts would not be cumulatively considerable, and the 2005 LRDP would not result in a cumulatively considerable contribution to this impact.

Related projects in the region could increase risks associated with a failure of the Seven Oaks Dam or the Santa Ana Valley Pipeline. The Seven Oaks Dam is located on the Santa Ana River in the upper Santa Ana Canyon about 8 miles (13 km) northeast of the City of Redlands, approximately 24 miles upstream of the City of Riverside. The potential for catastrophic failure of the Seven Oaks Dam is considered remote, given the recent completion date (in 1999) and the periodic inspection of the dam by Corps of Engineers and the State of California. The Santa Ana Valley Pipeline, a component of the State Water Project, conveys water from the Devil Canyon Power Plant to Lake Perris and is located east of the campus along the base of the Box Springs Mountains. The pipeline is subject to periodic inspection by State authorities and DWR. Related projects would result in additional persons and property exposed to risks, but would not increase the potential for failure of these facilities. The potential for failure is extremely remote, and impacts would not be cumulatively considerable. The project would not have a cumulatively considerable contribution to these effects.

Related projects could increase the number of persons exposed to seiche, tsunami, or mudflow. Due to the regional location of related projects inland, seiche and tsunami risks are not an issue. The potential for mudflows to affect related projects would occur where development occurs in area with steep slopes. Because proposed project development is limited to on-campus areas, related projects occurring in the watershed would not affect risks from mudflows on campus, where risks are limited to areas immediately adjacent to the southeastern hills, or within the existing on-campus arroyos, where development would be limited. Therefore, impacts would not be cumulatively considerable and the project would not have a cumulatively considerable contribution to these effects.

4.8.6 References

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4.9 LAND USE AND PLANNING

4.9.1 Introduction

This section of the EIR describes existing land uses on campus and analyzes the potential for implementation of the 2005 LRDP to result in land use incompatibilities between campus development and adjacent community land uses, as well as the physical division of an established community, conflicts with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect, or conflicts with any applicable habitat conservation plan or natural community conservation plan.

Data used in the preparation of this section was obtained from various sources, including UCR staff, previous environmental documentation prepared for UCR, and the Southern California Association of Governments *Regional Comprehensive Plan and Guide*. Bibliographic entries for reference materials are provided in Section 4.9.5 (References) of this section.

Three comment letters related to land use were received on to the Notice of Preparation circulated for the project. One letter requested that the EIR analyze consistency of LRDP land use policies with applicable SCAG policies. Other comments requested that the EIR address the feasibility of the original (1990 LRDP) plan for westward expansion that did not require infill, as well as the compatibility of the potential new parking structure planned for Lot 13 with surrounding land uses and impacts from long-range potential projects such as a stadium, training program, ice-skating rink, or similar non-curricular projects. Continuation of the original 1990 LRDP plan is analyzed as part of project alternatives in Section 6.0 (Alternatives) of this EIR. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

It should be noted that an analysis of maintaining the current 1990 LRDP is addressed as Alternative B (No Project/Continued Implementation of the 1990 LRDP) in Section 6.0 (Alternatives). The 2005 LRDP describes the full range of land uses contemplated for the UCR campus between 2001 and the academic year 2015/16. No stadium, training programs, ice-skating rink, or similar non-curricular projects are currently articulated within the list of academic program and support requirements included in the 2005 LRDP. As such, this EIR addresses only land uses identified in the 2005 LRDP. Inclusion of analysis of land uses that have been previously discussed or postulated, but are not proposed in the 2005 LRDP, is not required by CEQA for this EIR. These, or other land uses that may be proposed in the future, would be evaluated as to their relevance and importance to the UCR academic program, and may require separate CEQA documentation should specific proposals be put forth.

4.9.2 Existing Land Use

On-Campus Land Use

The UCR campus' approximately 1,112 acres 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 600.8 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 511.3 acres located west of the freeway and is primarily used for agricultural teaching and research. This area is generally bounded by freeway on the east, University Avenue to 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 inholding parcel within the West Campus, south of Martin Luther King Boulevard, which the City has designated as surplus land.

Land uses on the UCR campus can be described by location (e.g., east or west of the I-215/SR-60 freeway) or by functional land use category. To provide consistency with the Draft 2005 LRDP, existing on-campus land uses are generally described by the land use categories used in the 2005 LRDP.

Academic/Administrative

The majority of the existing academic and administrative facilities are located within the East Campus academic core, which is generally surrounded by Campus Drive. The 1990 LRDP proposed a precinct plan, which proposed to co-locate facilities by academic units to maintain then-current proximities. As a result, academic facilities affiliated with the major academic units are generally grouped within a portion of the academic core, which can generally be defined by four sections, radiating from the Carillon Tower. The College of Humanities, Arts, and Social Sciences (CHASS), is generally located in the west quadrant of the core. The College of Natural and Agricultural Sciences is generally located in the east section of the core, as evidenced by the numerous laboratories and greenhouses, with the Physical and Life Sciences primarily located in the northeast section. The Bournes College of Engineering is located in the core's north section and the Anderson Graduate School of Management is in the south section. Since adoption of the 1990 LRDP, several facilities have been sited outside the precincts delineated in the 1990 LRDP, in response to program growth and constraints imposed by the precinct plan. Many academic facilities are also multi-disciplinary, thus the organization of facilities by academic precincts has become less desirable as a way to organize land use. More important is proximity to existing facilities to foster interaction and access.

Housing

The majority of student housing on the UCR campus is located on the East Campus, north of University Avenue, Campus Drive, and Box Springs Road. Types of housing include residence halls, family student housing, and apartment complexes. Residence halls, including Aberdeen and Inverness, Lothian, and Pentland Hills are located east of Aberdeen Drive, south of Linden Street, and north of Big Springs Road.

Apartment facilities are located west of Canyon Crest Drive, and include the Bannockburn complex, University Plaza, and Stonehaven on the East Campus and the International Village on the West Campus. The Canyon Crest Family Student Housing complex is located east of Canyon Crest Drive between Blaine and Linden Streets.

Athletics and Recreation

Recreational facilities and outdoor fields are generally located in the northwestern portion of the East Campus. These facilities are used for intercollegiate athletics, intramural sports, sports clubs, and general recreation. These facilities include a student recreation center, a gymnasium, a track stadium, handball courts, tennis courts, and a swimming pool (Physical Education building). Outdoor playing fields are located on the East Campus south of Linden Street in the Lower Intramural Fields and includes a softball field. Additionally, UCR and the City of Riverside operate the UCR/City Sports Center, located on Campus lands at the southwest corner of Canyon Crest Drive and Blaine Street. This facility provides multi-use playing fields, a baseball field with stadium style seating for 2,500 persons, maintenance structures, and parking for 350 vehicles.

Agricultural Teaching and Research Fields

Originally established as a Citrus Experiment Station in 1906 at the foot of Mount Rubidoux, agricultural teaching and research fields have long been a predominant use on the UCR campus. The station was moved to its current site at the foot of the Box Springs Mountings in 1917. The East Campus includes approximately 14.5 acres of orchards, generally located north and west of the Botanical Gardens and a number of greenhouses and other support facilities. 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.

Open Space

Open Space on the UCR campus can generally be categorized as one of three types: natural, naturalistic, and landscaped. Natural open spaces are those undeveloped areas of the campus with few, if any structures, and mostly native and naturally occurring plant species. This area predominantly includes the southeast hills on the East Campus. Naturalistic open spaces are mostly undeveloped, but have been subject to modification and/or the introduction of ornamental trees and shrubs. This area is generally limited to drainage channels, or arroyos, and the UCR Botanic Gardens. Landscaped open spaces have been developed with turf-covered lawn areas, mature trees, and shrubs or groundcover in planting beds, typically around the edges of these spaces. This area includes the major open spaces on campus, such as the Carillon Mall, and other landscaped pedestrian malls and courtyards in the academic core of the East Campus. The West Campus is planned with an additional major open space: The Grove and several pedestrian malls and landscaped buffers.

Recreational playing fields and agricultural teaching and research fields are programmed for specific functions, including sports activities and agricultural research. As such, these areas found on both the East Campus and West Campus are categorized as Athletics and Recreation or Agricultural Teaching Research fields, and are not considered open space for the purposes of this EIR.

Parking

Parking on the UCR campus is currently provided in surface lots, which are concentrated around the edge of the academic core on the East Campus, with access provided via Campus Drive, Canyon Crest Drive, and Box Springs Road. Additional parking is located adjacent to the student residence halls, with access via Linden Street and North Campus Drive. One parking structure is associated with the Campus adjacent to the UNEX facility. The future parking plan for the campus identifies parking structures around the perimeter of the campus and several small interior surface lots.

Existing Adjacent Land Use

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 multi-family 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 multi-family 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.

University Avenue 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 (e.g., UNEX) and even six stories (the Courtyard hotel) in height. Linden Avenue and Blaine Streets run east/west, and are occupied primarily by two and three-story multi-family residential uses in the vicinity of the campus. Watkins Drive forms the northeastern edge of the 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 Hills Drive fronts the eastern edge of the campus (north of Box 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 Box Springs Road west of Watkins Drive. South of Box 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 campus, with scattered residential uses located west of the freeway. The campus boundary extends south along Canyon Crest Drive, with single-family residences located to the east of the four-lane roadway. Le Conte Drive forms

the southernmost boundary of the 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 campus, with single-family residential uses as the predominant use on the western side of the street. West of the I-215/SR-60 freeway, the campus is generally fronted by two-story multi-family residential structures on the north, and the rear of commercial properties nearer to Chicago Avenue. Except for some newer development along University Avenue, one- and two-story structures are prevalent in the vicinity of the campus.

4.9.3 Regulatory Framework

Federal

On April 24, 2003 the USFWS re-proposed to designate critical habitat for the coastal California gnatcatcher on approximately 495,795 acres of land in portions of Ventura, Los Angeles, Orange, Riverside, San Bernardino, and San Diego counties. Areas proposed as critical habitat are identified in 13 separate units; Unit 12 encompasses the entire UC Riverside Campus. However, this species very closely associated with sage scrub vegetation, which is found mainly within the southern portion of the East Campus, generally east and south of South Campus Drive, including the southeastern hills (see Figure 4.4-1 in Section 4.4, Biological Resources). The Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP) also addresses the gnatcatcher, and does not identify any portion of the UCR campus as containing critical habitat for the gnatcatcher (or any other species). It does however include portions of the surrounding hills, as identified in Subunit 2 – Sycamore Canyon West of the MSHCP. The portion of the campus that is within the boundaries of the MSHCP is shown in Figure 4.4-3 in Section 4.4, Biological Resources. Refer to Section 4.4 (Biological Resources) for a discussion of critical habitat designation and potential effects of such designation.

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.

SCAG is responsible for developing transportation, land use, and energy conservation measures that improve quality of life. SCAG's Regional Comprehensive Plan and Guide (RCPG) is a framework for decision-making for local governments, assisting them in meeting federal and State mandates for growth management, mobility, and environmental standards, while maintaining consistency with regional goals regarding growth and changes through the year 2015, and beyond. Policies within the RCPG include consideration of air quality, land use, transportation, and economic relationships by all levels of government. The RCPG includes policies that are relevant to the 2005 LRDP, as discussed under Impact 4.9-2.

Local

As a State entity, the University of California, of which UCR is a part, is not subject to local land use policies such as the County of Riverside General Plan or the City of Riverside General Plan. Nevertheless, such policies are of interest or concern because the campus and local development are coincident. The campus has a long tradition of working voluntarily and cooperatively with the City of Riverside, and it is University policy to seek consistency with local plans and policies, where feasible. Therefore, it is appropriate to present a summary of these policies in this EIR.

County of Riverside

The County of Riverside completed a Final General Plan in October 2003 that serves as the policy guide concerning desirable future physical development of the community. The Final EIR on the General Plan was released in March 2003. 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.

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 Interstate 215 (I-215) 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 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.

City of Riverside

The City of Riverside's General Plan was completed in 1969 and designates the entire UCR campus for institutional uses. A summary of the General Plan was completed in 1984. The City of Riverside Planning Department is currently in the process of preparing a comprehensive revision to the General

Plan to update the plan and incorporate all amendments since the plan was adopted. A draft Housing Element of the Riverside General Plan was developed in 1989.

The UCR campus is located at the eastern edge of the City of Riverside, within the University Community Plan area, which was adopted in 1986 and provides the most recent statement of the City's land use designations, goals and policies relevant to the campus.

University Community Plan

The areas in the city surrounding UCR are subject to the provisions of the University Community Plan. Written by the City with input from UCR, the University Community Plan's original recommendations have been incorporated into the City of Riverside General Plan as amendments.

The Land Use Element of the University Community Plan designates the UCR campus for public and institutional uses. Surrounding designations include retail business and office, visitor commercial, high density and medium-low density residential to the north; low density, medium-low density and high density residential and open space to the east; high density and medium-low density residential and office to the south; and public park and golf course, natural arroyo and high density and medium-low density residential to the west.

The University Community Plan addresses six primary issues: the need for joint planning efforts between the City of Riverside and UCR, the need for an adequate supply of housing in proximity to the UCR campus, the type and quality of development along University Avenue, the need for adequate neighborhood commercial facilities, the density of development in the Mount Vernon Bowl residential area and preservation of the Box Springs Mountain Regional Park. The University Community Plan includes various land use policies relevant to these issues:

- **A1**—Endeavor to notify the campus, and vice versa, at the earliest possible time of development proposals within the University Community.
- **B1**—Encourage construction of new rental apartments, retention of existing and future rental stock and provision of affordable units through implementation of Policies F1, F2, F3, and F4 of the City's Housing Element (refer to Housing Section 4.8)
- **C1**—Limit vehicle oriented commercial uses to that portion of University Avenue east of Chicago Avenue while encouraging less intense neighborhood and community oriented commercial uses west of Chicago Avenue.
- **C3**—Encourage rehabilitation and redevelopment of properties along University Avenue.
- **C5**—Creation of a continuous uniform streetscape along University Avenue.
- **F1**—Encourage Riverside County to acquire those lands identified for future acquisition for Box Springs Mountain Regional Park in order to maximize open space preservation.
- **F2**—Encourage Riverside County to carefully review development proposals for Open Space designated areas adjacent to the Box Springs Mountain Regional Park. Such development should be sensitive to the natural terrain and compatible with the very low-density residential uses in the Mount Vernon Bowl area.

The City is currently updating the University Community Plan.

4.9.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps 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 2005 LRDP to result in land use incompatibilities between campus development and adjacent community land uses, or physically divide an established community, 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, or conflict with any applicable habitat conservation plan or natural community conservation plan, existing land uses (on- and off-campus) were compared to proposed future land uses that would be permitted under the 2005 LRDP.

For the purposes of this analysis, land uses related to housing are described as either single-family residential or multi-family residential. In this context, single family residential refers to a detached home, often single story, which is typically occupied by a single household. Multi-family residential buildings have more than one dwelling unit, typically between one to three stories, including apartments or condominiums. Because UCR provides housing for students with dependents, the term "Family Student Housing" occurs herein and refers to an on-campus complex that houses student families. Because the current and proposed future Family Student Housing complex would include multiple units, it represents a multi-family residential land use. However, student housing, such as residence halls or apartment complexes are also a multi-family residential land use. To avoid confusion, all references to the on-campus housing complex for student families will occur as "Family Student Housing." References to the land use type "multi-family residential" will not include capitals.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on land use if it would do any of the following:

- Physically divide an established community
- Result in development of land uses that are substantially incompatible with existing adjacent land uses or with planned uses [21]
- 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

[21] This threshold is not included in Appendix G and was added to specifically address the compatibility of land uses in the 2005 LRDP with adjacent land uses.

Effects Not Found to Be Significant

Threshold	Would the proposed project physically divide an established community?

The City of Riverside has developed around and in response to the campus. Implementation of the 2005 LRDP would not include any development outside of established campus boundaries, and no incursion into, or division of, the surrounding residential communities would occur. Therefore, the Initial Study (included in Appendix A of this EIR) determined that no effects related to physically dividing an established community would occur and no additional analysis is required in this EIR.

Impacts and Mitigation

Threshold	Would the proposed project result in development of land uses that are substantially incompatible with existing adjacent land uses or with planned uses?

Impact 4.9-1 **Implementation of the 2005 LRDP would result in changes in on-campus land use. These changes could be substantially incompatible with existing adjacent land uses. With implementation of the relevant 2005 LRDP Planning Strategies and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities, the replacement of existing structures, and the conversion of existing open space and agricultural teaching and research fields into the sites of academic buildings and related support facilities. The development of these new structures and facilities have the potential to be substantially incompatible with existing adjacent land uses.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies are relevant to land use on the campus and the adjacent area:

PS Land Use 1 — *Achieve academic core densities of 1.0 FAR or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses.*

PS Land Use 2 — *In order to achieve 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 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 1	*Protect the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve, to protect wildlife habitat, provide a visual backdrop to the campus, and protect against erosion.*
PS Open Space 2	*Within the Natural Open Space Reserve, no major facilities are allowed (except for sensitively sited utility projects), vehicular and pedestrian access will be limited, and native plant materials will be used where needed for erosion, screening, and restoration.*
PS Open Space 3	*In Naturalistic Open Space areas, where arroyos and other natural features exist, preserve wherever feasible existing landforms, native plant materials, and trees. Where appropriate, restore habitat value.*
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.*
PS Open Space 5	*Retain the Carillon Mall as a major Campus Landmark Open Space, respecting its existing dominant width of approximately 200 feet throughout its length.*
PS Open Space 6	*Provide a new Campus Landmark Open Space on the West Campus, The Grove, to reflect campus citrus heritage and as a gathering/activity space.*
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*
PS 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.*
PS Conservation 2	*Site buildings and plan site development to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.*
PS Conservation 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.*
PS Conservation 4	*Preserve historic buildings to the extent feasible.*
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 Master Plan to ensure conformity with LRDP Planning Strategies.*

PS Development Strategy 3 — *Review other plans 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, continued implementation of the following existing campus Programs and Practices would also reduce potential land use incompatibilities:

PP 4.9-1(a) — *The campus shall provide design architects with the 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 architects with the Landscape Master Plan and instructions to develop project-specific landscape plans that are consistent with the Master Plan 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(c) — *The campus shall continue to relocate, where feasible, mature "specimen" trees that would be removed as a result of construction activities on the campus.*

(This is identical to Aesthetics PP 4.1-2(b).)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus. On the East Campus, this would include infill development in the academic core, expansion of the academic core, new housing and redevelopment of existing housing sites, new recreational facilities, new parking facilities and preservation of open space. On the West Campus, new academic, housing, recreation, support, and open space would be developed in the area north of Martin Luther King Boulevard. Because each of these potential land uses and/or changes in land use could result in land use incompatibilities with adjacent land uses, each potential change in land use is addressed individually below.

East Campus

Infill Development: Most of the academic buildings on the UCR campus are located within the academic core, the area generally defined by Campus Drive, although some existing academic facilities are located south of South Campus Drive and east of East Campus Drive (south of Big Springs Road). To accommodate additional development in this area, the 2005 LRDP proposes to increase building density in the center of the campus by developing structures on sites that are currently undeveloped (e.g., infill development) and, in some instances, replacing existing buildings with new structures. Because future development would be limited to academic facilities (including administration and libraries), this

development would be consistent with existing land uses, and no land use incompatibilities would result within the academic core.

Expansion of the Academic Core: Implementation of the 2005 LRDP would expand the academic core on the East Campus: (1) north of North Campus Drive to include the area currently occupied by the Lower Intramural Fields; (2) the northern and southern edges of University Avenue (west of Canyon Crest Drive and south of the Gage Basin); (3) east of East Campus Drive, in the area occupied by a portion of Parking Lot 13 (east of the under construction Physical Sciences Building) and Parking Lot V10 and east of East Campus Drive; and (4) south of South Campus Drive. The development of academic facilities on the Lower Intramural Fields and north of University Avenue would replace existing turf-covered lawn areas with academic buildings separated by landscaped open spaces and pedestrian walkways. Development east and south of Campus Drive would replace existing surface parking lots, greenhouses, and other support facilities with academic buildings. Because future development would be limited to academic facilities (including administration and libraries), this development would be consistent with adjacent land uses within the academic core, and no land use incompatibilities would result.

New Housing: Implementation of the 2005 LRDP would result in the development of additional student housing at the northeast corner of the East Campus (east of the Pentland Hills and Lothian Residence Halls). This would result in the conversion of undeveloped open space into the site of multi-family residential structures (with parking integrated into, or adjacent to, the housing structures). The proposed development of multi-family student residential structures in close proximity to single-family residences along the adjacent portions of Valencia Hill Drive and Watkins Drive would be potentially incompatible with existing adjacent land uses due to the increased land use intensity.

Implementation of LRDP Planning Strategies *Open Space 4* and *Campus and Community 1* would require the development of landscaped buffers along the adjacent portions of Valencia Hill Drive and Watkins Drive to provide additional separation of future uses from the adjacent roadways. At this location, Valencia Hill Drive is a two-lane street and Watkins Drive was formerly a four-lane street that was re-striped to two lanes with on-street parking and bike lanes. In addition, a rail line and a Department of Water resources water line are located between Watkins Drive and the single-family homes to the north. Although no site plan for the proposed housing has been developed, based on the conceptual LRDP Land Use Plan (Figure 3-5), the provision of a landscaped buffer and setbacks from the roadway would result in the separation of the on-campus student housing from the adjacent single family homes by a minimum of approximately 100 feet on Valencia Hill Drive and approximately 200 feet on Watkins Drive. Implementation of the other LRDP Planning Strategies identified above and continued implementation of PP 4.9-1(a), PP 4.9-1(b), and PP 4.9-1(c) would assure that buildings are sited to minimize site disturbance and maintain existing landscapes, buildings are designed to be consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, building designs are subject to a campus design review process, and that mature specimen trees are preserved or relocated, whenever feasible. Buildings would be oriented towards the campus, and away from existing residences. With provision of

the buffer and the other identified measures, potential land-use incompatibilities would be reduced to a less-than-significant level at this location

Redevelopment of Housing: To accommodate the proposed housing goal (of 50 percent of the student population in on-campus or campus-controlled student housing), implementation of the 2005 LRDP would result in redevelopment of the Canyon Crest Family Housing complex to provide higher-density housing, recreational space and parking. The 2005 LRDP proposes to site apartment uses nearest to Blaine Street and residence halls and recreational space nearer to Linden Street. In addition, the Bannockburn Village mixed-use complex may be redeveloped to increase the housing density on the site. Although density of housing at both locations would increase, no change in land use at either location would result. Adjacent land uses along Linden Street, Blaine Street, and Canyon Crest Drive are predominantly multi-family residential uses, and no substantial land use incompatibilities would result.

Recreation: New recreational space, which may include turf-covered fields or basketball or volleyball courts, would be developed north of Linden Street (in the southern portion of the redeveloped Family Student Housing complex) and interspersed with the new student housing east of the Pentland Hills and Lothian Residence Halls. The creation of new recreational space along Linden Street would change the land use in this area from residential to recreational, which would be consistent with the land use of the Student Recreation Center and Track Stadium to the south (across Linden Street) and compatible with new student housing to the north and east (within the redevelopment Family Student Housing complex). New recreational space developed adjacent to the new housing east of the Pentland Hills and Lothian Residence Halls would be compatible with the student housing facilities, and would be located along the east side of Pentland Way. If outdoor recreational space is used in evening hours, then associated activities may result in nuisance noise and light effects. However, recreational activities would not be an inherent conflict with adjacent student housing uses. Further, the creation of landscaped buffers along the adjacent portions of Valencia Hill Drive and Watkins Drive (per LRDP Planning Strategies *Open Space 4* and *Campus and Community 1*) would further reduce any potential land use incompatibilities between the recreation space and off-campus single-family residences. Thus, development of new recreational space on the East Campus would not be substantially incompatible with existing adjacent land uses or with planned uses.

Parking: Implementation of the 2005 LRDP would result in the relocation of parking from the academic core to the perimeter of the campus, which could result in the development of parking structures at several locations, including (1) the eastern edge of Parking Lot 13 (south of Big Springs Road), (2) the corner of Canyon Crest Drive and Blaine Street (currently occupied by a portion of the Family Student Housing complex), (3) the western edge of the UCR/Riverside Sports Complex (currently a surface parking lot), (4) Parking Lot 24 (on Canyon Crest Drive, south of Linden Street), and (5) Parking Lot 1. Of these five potential sites, four are currently surface parking lots (Parking Lot 13, the surface lot at the western edge of the UCR/Riverside Sports Complex, Parking Lot 24, and Parking Lot 1). Development of a parking structure at these locations would not represent a change in land use. However, three of those locations are adjacent to existing or planning residential land uses. Parking Lot 13, south of Big Springs Road, is adjacent to several single- and multi-family residences to

the east and the western edge of the UCR/Riverside Sports Complex is located near multi-family residential uses west of Rustin Avenue and north of Linden Street. In addition, the potential site at the corner of Canyon Crest Drive and Blaine Street is adjacent to proposed new UCR student housing on the south and east (within the redeveloped Family Student Housing complex) and near multi-family residential to the north across Blaine Street. Development of multi-level parking structures at these locations has the potential to result in incompatibilities with the existing (and proposed future) adjacent residential land uses. Conflicts could include noise associated with new parking structures (vehicular noise, car alarms, car doors slamming) and increased vehicular activity associated with parking structures. These types of changes would not alter the fundamental residential character of the area because parking uses are a component of the adjacent residential development.

Implementation of LRDP Planning Strategies *Open Space 4* and *Campus and Community 1* would require the provision of a landscaped buffer east of Parking Lot 13, between the proposed structure and the adjacent off-campus single-family homes. These strategies are designed to buffer future uses from adjacent roadways. However, they would also have the effect of minimizing land use impacts from development on adjacent uses. In addition, Planning Strategies *Conservation 1* (protect native habitat, remnant arroyos, and mature trees), *Conservation 2* (site buildings and plan development to minimize site disturbance), *Development Strategy 1* (design review of building and landscape development), and continued implementation of PP 4.9-1(a), PP 4.9-1(b), and PP 4.9-1(c) would assure that parking structures are designed to be consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, and that mature trees are preserved or relocated whenever feasible. The provision of a landscaped buffer along the eastern edge of Parking Lot 13, the presence of existing streets between proposed parking structures and off-campus residential land uses (e.g., Blaine Street, Canyon Crest Drive, and Rustin Avenue) and the inclusion of appropriate design features and landscaping would reduce potential land use incompatibilities between the adjacent residential land uses and parking.

Open Space: The 2005 LRDP would preserve the undeveloped southeast hills as a Natural Open Space Reserve; designate the arroyos, Picnic Hill, and Botanic Gardens as Naturalistic Open Spaces; preserve the Carillon Mall as a Campus Landmark Open Space; and recognize Pedestrian Malls and Linear Open Spaces within the academic core. Within the Natural Open Space Reserve, sensitively sited utility projects could be developed. Within the other open spaces, in addition to utility projects, circulation improvements, such as pedestrian and bicycle paths, could also be developed.

Implementation of LRDP Planning Strategies *Open Space 1* (protect southeast hills as Open Space Reserve), *Open Space 2* (limit development and access in southeast hills), and *Open Space 3* (preserve natural landforms, plant materials and trees in *Naturalistic* Open Space), open space in the southeast hills, arroyos, Picnic Hill and the Botanic Gardens would be preserved. Continued implementation of PP 4.9-1(a), PP 4.9-1(b), and PP 4.9-1(c) would assure that future utility and circulation projects within open space areas are sited and designed consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, and that mature specimen trees are relocated when feasible. With continued implementation of the identified campus Planning Strategies and Programs and Practices, potential future

development within designated open space areas would not result in substantial land use incompatibilities.

West Campus

Development on the West Campus would all occur within the same general area, bounded by the I-215/SR-60 freeway, Martin Luther King Boulevard, a line extending south of Cranford Avenue, and University Avenue. Instead of addressing the potential land use impact of each type of land use on the West Campus, the potential impact to the entire West Campus is addressed as a whole. Potential land uses on the West Campus include:

Academic: The 2005 LRDP would extend the academic core onto the West Campus, in the area generally bounded by Martin Luther King Boulevard, the I-215/SR-60 freeway, University Avenue, and a line extending south from the western edge of UNEX.

Housing: New housing (and associated child development center and parking facilities) would be developed on the West Campus, in the area generally bounded by the northern edge of the West Campus (partially bordered by Everton Place), a line extending south from the western edge of UNEX (west of the expanded Academic Core), Martin Luther King Boulevard, and a line extending south of Cranford Avenue.

Recreation: New recreational space would be provided on the West Campus adjacent to the new housing, which could include turf-covered playing fields or court space, such as basketball or volleyball, and/or buildings that accommodate recreational or athletic programs.

Support: Campus support facilities, including physical and central plant facilities, or housing support facilities, could be developed along the eastern edge of the West Campus (adjacent to the I-215/SR-60 freeway) and at the northwestern edge of the West Campus.

Parking: New parking on the West Campus would be developed at the northeast corner of Martin Luther King Boulevard and Canyon Crest Drive (adjacent to the I-215/SR-60 freeway), north of Martin Luther King Boulevard and east of Iowa Avenue, and east of UNEX, on University Avenue. Parking for residents would be incorporated within new campus housing areas. Parking for recreation users would be incorporated within project design for recreation uses.

Open Space: New open space would be created on the West Campus, including a new Campus Landmark Open Space, the Grove, pedestrian malls and/or linear open spaces (including a pedestrian link to the East Campus), and Neighborhood Parks, which would be developed in conjunction with new Family Student Housing.

Campus Reserve: An approximately 37-acre parcel at the western edge of the West Campus (northeast of the intersection of Chicago Avenue and Martin Luther King Boulevard) is designated as a reserve for future land uses. For the purposes of this EIR, it is assumed that no development would occur during the LRDP planning horizon and this area would remain as agricultural teaching and research fields. Although the type of crops and orchards in this area may be modified to change due to changes in

teaching and research programs, no change in the basic land use of this area and its surroundings is anticipated.

Agricultural Teaching and Research Fields: LRDP Planning Strategy *Land Use 3* would retain the agricultural teaching and research fields south of Martin Luther King Boulevard. Although the type of crops and orchards may be modified due to changes in teaching and research programs, no change in the existing visual character or quality of this area and its surroundings is anticipated.

Development of new academic buildings and open space in proximity to existing facilities (including UNEX, Human Resources, Highlander Hall, and the International Village) would not result in land use incompatibilities with those existing on-campus uses. Implementation of LRDP Planning Strategies *Open Space 4* would require development of a landscaped buffer along the I-215/SR-60 freeway to screen the freeway from the on-campus uses. In addition, implementation of LRDP Planning Strategies *Open Space 4* would also require a buffer along the northern edge of Martin Luther King Boulevard, which would buffer academic land uses and parking on the West Campus from the street. The preservation of the Campus Reserve at the northeast corner of Chicago Avenue and Martin Luther King Boulevard would serve as a buffer between on-campus housing and off-campus residential uses west of Chicago Avenue. The LRDP land use plan proposes to site support uses at the western edge of the West Campus development, adjacent to the commercial uses that front onto Chicago Avenue. The northern edge of West Campus development would be comprised of multi-family residential development, which would be consistent with the off-campus multi-family uses (generally located north of Everton Place). Land use impacts from remaining agricultural activities to the west and south of Martin Luther King Boulevard are discussed under Impact 4.2-2 in Section 4.2, Aesthetics, and these impacts would be less than significant. Thus, no land use incompatibilities would result from the proposed development of the West Campus.

Continued implementation of PP 4.9-1(a), PP 4.9-1(b), and PP 4.9-1(c) would assure that new development would be sited to minimize site disturbance and maintain existing landscapes and would be designed to be consistent with the Campus Design Guidelines and the Campus Landscape Master Plan, which would contribute to an overall visual character of new development that is compatible with existing on-campus development. LRDP Planning Strategy *Land Use 3* would retain the agricultural teaching and research fields south of Martin Luther King Boulevard.

With implementation of the identified LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not result in development of land uses that are substantially incompatible with existing adjacent land uses or with planned uses, and this impact would be *less than significant*.

Threshold	Would the proposed project 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?

Impact 4.9-2 **Implementation of the 2005 LRDP could conflict with an applicable land use plan, policy, or regulation of an agency with**

jurisdiction over the project. With implementation of the relevant 2005 LRDP Planning Strategies, Programs and Practices, and Mitigation Measures, this 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 an institutional land use, and the LRDP is generally consistent with this local plan.

The campus, 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 Avenue Specific Plan in an effort to coordinate planning efforts between the City of Riverside and the campus.

As required by Section 15125(d) of the CEQA Guidelines, this document discusses any inconsistencies between the 2005 LRDP and applicable regional plans. The regional plans relevant to the 2005 LRDP, and for which a consistency analysis is provided, include the Regional Comprehensive Plan and Guide (SCAG 1995), the Regional Transportation Plan (SCAG 2001), the Water Quality Control Plan for the Santa Ana River Basin (California Regional Water Quality Control Board, Santa Ana Region, 1995), and the Air Quality Management Plan (South Coast Air Quality Management District [SCAQMD] 1997 and 1999). The following sections provide a consistency analysis between the applicable regional plans and the 2005 LRDP. As demonstrated by the analysis below, the 2005 LRDP would not 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.

Southern California Association of Governments Regional Comprehensive Plan and Guide (RCPG)

SCAG, which is the designated Metropolitan Planning Organization for six southern California counties (Ventura, Orange, San Bernardino, Riverside, Imperial, and Los Angeles), is federally mandated to develop plans for transportation, growth management, hazardous waste management, and air quality. SCAG has prepared the RCPG in conjunction with its constituent members and other regional planning agencies. The RCPG is intended to serve as a framework to guide decision-making with respect to the growth and changes that can be anticipated through the year 2015. The Plan consists of five core chapters that contain goals, policies, implementation strategies, and technical data that support three overarching objectives for the region, including (1) improving the standard of living for all, (2) improving the quality of life for all, and (3) enhancing equity and access to government. Local governments are required to use the RCPG as the basis for their own plans and are required to discuss the consistency of projects of

"regional significance" with the RCPG. Specific growth management, regional mobility, and air quality, and water quality policies of the RCPG are discussed below.

Growth Management Chapter

Policy 3.05 Encourage patterns of urban development and land use that reduce costs of infrastructure construction and make better use of existing facilities.

Consistency Analysis. The 2005 LRDP proposes construction of 7.1 million gsf of additional building space on the campus. These proposed uses would consist of academic, research, administrative, support, parking, recreational, and residential uses to support the purposes of the campus. Infrastructure systems are in place on campus, and beyond, to serve current development.

Construction of most campus facilities under the 2005 LRDP would require basic service connections to the existing delivery infrastructure and would, therefore, minimize costs associated with infrastructure construction.

The campus has instituted energy-conservation measures and will continue its ongoing energy conservation measures and continue to implement all new development under the 2005 LRDP in accordance with specifications contained in Title 24 of the CCR. With continued implementation of current energy conservation practices and compliance with Title 24 regulations, implementation of the 2005 LRDP would minimize the costs of infrastructure and energy delivery by minimizing the increase in campus energy demand, as well as reducing campus energy use during peak demand periods. Energy conservation measures would result in the use of natural gas on the campus in an efficient manner.

Regional infrastructure is adequate to serve the campus during the 2005 LRDP planning horizon, as established in Section 4.15 (Utilities and Serve Systems) of this document. Limited expansion or renovation of campus infrastructure may be required as part of specific projects, but overall campus infrastructure is adequate to accommodate development under the 2005 LRDP on the East Campus. On the West Campus, new infrastructure would be required, since this area consists primarily of agricultural fields. Development would occur in a manner that maximizes use of existing facilities. Localized infrastructure needs would be addressed on a project-specific basis, prior to project approval to ensure the adequate conveyance capacity is provided.

The 2005 LRDP would also efficiently utilize existing land resources by implementing the following objectives:

- Continue the infill development of the East Campus, and expand to the West Campus while maintaining a compact development pattern (LRDP Physical Objective)
- Focus high activity uses in places that will promote connectivity and interaction within the campus and between the campus and the City (LRDP Physical Objective)
- Achieve academic core densities of 1.0 FAR or higher on both the East and West Campuses in order to achieve a balance of academic land area versus other required uses.

Planning Strategies described under Impact 4.9-1, above, would also contribute to consistency with this policy. Planning Strategy *Land Use 1* would efficiently utilize existing land resources by resulting in development with academic core densities of 1.0 FAR or higher on both the East and West Campuses. In addition, Planning Strategy *Conservation 3* and *Conservation 5* would minimize infrastructure construction by increasing building densities on campus and adhering to the conservation requirements of Title 24 of the California Code of Regulations.

Continued implementation of existing energy conservation practices, LRDP objectives, and LRDP Planning Strategies addressing energy conservation would result in consistency with this SCAG policy.

Policy 3.09 Support local jurisdictions' efforts to minimize the cost of infrastructure and public service delivery, and efforts to seek new sources of funding for development and the provision of services.

Consistency Analysis. The consistency analysis for Policy 3.05, above, describes existing infrastructure use and conservation practices, as well as LRDP objectives that would contribute to reducing costs for infrastructure and making better use of existing facilities. These methods would support SCAG Policy 3.09, which is aimed at reducing the cost of infrastructure and supporting efforts to seek new sources of funding for the development and provision of services. The 2005 LRDP is, therefore, consistent with this policy.

Policy 3.10 Support local jurisdictions' actions to minimize red tape and expedite the permitting process to maintain economic vitality and competitiveness.

Consistency Analysis. As noted above, UCR is part of the University of California, a constitutionally created unit of the State of California, and is, therefore, not subject to municipal policies such as the County and City General Plans. As such, UCR has considered the local plans and policies for the communities surrounding the campus and the LRDP is generally consistent with them. The campus seeks to maintain an ongoing exchange of ideas and information and to pursue mutually acceptable solutions for issues that confront both the campus and the community. To foster that process, UCR participates in and communicates with City and community organizations, and sponsors meetings and briefings to keep local organizations and City officials apprised of planning efforts. Implementation of the 2005 LRDP would not interfere with the City of Riverside's ability to expedite the permitting process with regard to other projects within its jurisdiction. In fact, the 2005 LRDP would enhance the economic vitality and competitiveness of the region by responding to the increased demand for academic services. Therefore, the 2005 LRDP is consistent with this policy.

Policy 3.12 Encourage existing or proposed local jurisdictions' programs aimed at designing land uses which encourage the use of transit and, thus, reduce the need for roadway expansion, reduce the number of auto trips and vehicle miles traveled, and create opportunities for residents to walk and bike.

Consistency Analysis. The UCR campus is located adjacent to major transportation corridors. The campus is bisected by Interstate 215/State Route 60, a major travel corridor in the southern

California region. This highway serves to connect the campus with the broader geographic region outside of the Riverside area. The central location of the campus encourages transit use. Viable transit opportunities include public bus services provided by outside operators and campus-operated shuttle bus services. UCR has also implemented a Transportation Demand Management (TDM) Program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The transportation alternatives made available to the campus population through the various transit services and the campus trip-reduction program are discussed in greater detail below.

Public Transit

Public transit service is available to the UCR population through a number of methods: the UCR campus Shuttle, Metrolink, UCR Tram, Orange Blossom Express Trolley, and the Riverside Transit Authority. A summary of these services is provided below; additional detail is provided in Section 4.14 (Transportation):

- *UCR Campus Shuttle ("Highlander Hauler"):* The Highlander Hauler is a free campus shuttle service that provides transportation services to University Extension, University Village, the Riverside Sports Center, Canyon Crest Towne Centre and various nearby apartment complexes from the main UCR campus.
- *Metrolink:* UCR Metrolink Transport provides a connection from the UCR campus to the Downtown Metrolink Station. Current Metrolink service is provided at the downtown Riverside station (a station on the north side of the UCR campus has been proposed as part of an extension of Metrolink service to the City of Perris). Currently, Metrolink provides service to Orange County and Los Angeles via three routes, with the additional service to Perris to be announced.
- *UCR Tram Service:* The UCR tram traverses Parking Lot 13 on the east side of campus from 9:00 A.M. to 11:00 P.M., Monday through Friday.
- *Orange Blossom Express Trolley:* The Orange Blossom Express Trolley provides service from UCR to downtown Riverside on weekends.
- *Riverside Transit Authority:* RTA Route 1 serves UCR on half-hour headways with service beginning at 5:46 A.M. outbound and ending at 8:26 P.M. inbound to UCR.
- *Sunlink (via connection w/UCR Metrolink Transport):* Sunlink provides express bus service between Downtown Riverside (RTA transfer terminal and Metrolink station) and the Coachella Valley (Palm Springs). A Connection to UCR is provided by UCR Metrolink Transport. The Sunlink route runs along University Avenue and enters the Moreno Valley Freeway (SR-60) adjacent to the UCR campus. A stop for UCR could be made at this location if justified by demand.

Campus Transportation Demand Management (TDM) Program

UCR has implemented a Transportation Demand Management (TDM) Program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The goal of Alternative Transportation 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. Programs and services are available to UCR faculty, staff, and students.

SCAQMD requires a survey of all campus employees to determine Average Vehicle Ridership[22] (AVR). UC Riverside attained an AVR of 1.52 in 2002, which exceeds the 1.5 AVR goal. The outcome represents a gain of 0.21 from the 1.31 AVR attained in 2001. This increase was potentially achieved in part through the improved survey response rate, which increased 9 percent over 2001. In addition, the survey was completed in the spring, which provided more representative data than the fall 2001 survey, due to the unique commute patterns of the campus population.

The specific components of the TDM Program (also referred to as the Alternative Transportation [AT] program) may change over time as the campus strives for the most cost-effective manner by which to continue to achieve its required goals, so long as the overall effectiveness of the Program is not compromised. A description of various components of the current TDM program is provided in Section 4.3 Air Quality.

The 2005 LRDP contains specific Planning Strategies 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 Planning Strategies are articulated in PS *Transportation 1* through *6*, described above under Impact 4.9-1. Planning Strategy *Transportation 1* would develop an integrated multi-modal transportation plan to encourage walking, carpool and vanpool, biking and transit use. Planning Strategy *Transportation 2* would expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses. Planning Strategy *Transportation 3* would provide a continuous network of bicycle lanes and paths throughout the campus. Planning Strategy *Transportation 5* (provide bicycle parking at convenient locations. Planning Strategy *Transportation 6* would implement parking management measures that may include, restricted permit availability, restricted permit mobility, and differential permit pricing.

In addition, Planning Strategy *Land Use 4*, described under Impact 4.9-1, provides for housing for 50 percent of enrollment in on-campus or campus-controlled housing, which would reduce AVR, since a smaller proportion of students would commute to the campus. These planning principles would serve to encourage use of transit, reduce the number of vehicle trips and miles traveled, and create further opportunities for campus students, faculty, and staff to walk and bike. Therefore, the 2005 LRDP is consistent with this policy.

Policy 3.13 Encourage local jurisdictions' plans that maximize the use of existing urbanized areas accessible to transit through infill and redevelopment.

Consistency Analysis. The 2005 LRDP proposes development entirely within the campus boundaries to accommodate the increased need for higher education services. Planning Strategies *Land Use 1* and *2*, described under Impact 4.9-1 above would result in consistency with this policy. Planning Strategy *Land Use 1* would efficiently utilize existing land resources by resulting in development with academic core densities of 1.0 FAR or higher on both the East and West Campuses, and Planning Strategy *Land Use 2* would result in infill and maintenance of a compact

[22] The AVR is the ratio of employees arriving between 6 A.M. and 10 A.M. to the motor vehicles they drive to campus.

and contiguous academic core. This infill development maximizes the use of the existing campus and provides the benefit of curtailing urban sprawl.

UCR is located in a rapidly growing urban environment, adjacent to major transportation centers, and the campus Transportation Demand Management Program promotes the use of local and regional transportation systems, as fully described in the consistency analysis for SCAG Policy 3.12. The campus is easily accessible from local and regional transportation systems that provide service to the campus, the City of Riverside, and the region. The infill development proposed by the 2005 LRDP would, in fact, provide additional housing and academic services without furthering urban sprawl and would continue to utilize existing public transportation services to accommodate the increased development and associated population growth. The 2005 LRDP would not require new or expanded transportation systems, and is, thus, consistent with this policy.

Policy 3.14 Support local plans to increase density of future development located at strategic points along the regional commuter rail, transit systems, and activity centers.

Consistency Analysis. As noted above in the discussions of SCAG Policies 3.12 and 3.13, the UCR campus is centrally located to regional activity centers connected by local and regional transportation systems. Adjacent activity centers, such as downtown Los Angeles, beaches, and regional recreational, entertainment, and shopping facilities, are located on transit routes and accessible from the campus.

The 2005 LRDP also includes the following objective that is designed to increase the density of future development on the campus:

- Continue the infill development of the East Campus, and expand to the West Campus while maintaining a compact development pattern (LRDP Physical Objective)

In addition, Planning Strategies described above under Impact 4.9-1 would contribute to consistency with this policy. Planning Strategy *Land Use 1* would increase academic core densities to 1.0 FAR or higher on both the East and West Campuses. Planning Strategy *Land Use 2* would result in infill and maintenance of a compact and contiguous academic core. Planning Strategy *Land Use 3* would retain teaching and research fields on the West Campus south of Martin Luther King Boulevard. Planning Strategy *Land Use 4* would result in housing 50 percent of student enrollment in campus-controlled housing

Therefore, the 2005 LRDP is consistent with this policy.

Policy 3.16 Encourage developments in and around activity centers, transportation corridors, underutilized infrastructure systems, and areas needing recycling and redevelopment.

Consistency Analysis. As noted above with regard to SCAG Policies 3.12, 3.13, and 3.14, the 2005 LRDP represents infill development on a highly developed campus, utilizing existing infrastructure and public service systems. The campus is centrally located to activity centers throughout the southern California region, connected by an extensive transportation network. The 2005 LRDP would not interfere with the ability of the City of Riverside to direct noncampus

development to areas with underutilized infrastructure systems or areas needing recycling or redevelopment. Therefore, the 2005 LRDP would be consistent with this policy.

Policy 3.18 Encourage planned development in locations least likely to cause adverse environmental impact.

Consistency Analysis. The UCR campus is part of a mostly developed urban environment. Development of 7.1 million gsf allocated under the 2005 LRDP would occur entirely within campus boundaries. Provision of additional housing, academic, research, administrative, support, parking, and recreational facilities on campus would minimize potential adverse environmental impacts on adjacent land uses. In addition, all of the existing campus programs, practices, and procedures, as well as 2005 LRDP mitigation measures identified in this EIR, are designed to reduce environmental impacts to the maximum extent feasible. In addition, the 2005 LRDP only allows for limited utility development on the southeast hills. The 2005 LRDP is consistent with this policy.

Policy 3.20 Support the protection of vital resources such as wetlands, groundwater recharge areas, woodlands, production lands, and land containing unique and endangered plants and animals.

Consistency Analysis. The UCR campus includes wetlands and land containing unique and endangered plants and animals. It does not include significant groundwater recharge areas or woodlands. On-campus production lands include approximately 295 acres of agricultural fields on the West Campus, of which 125 acres of would be lost with implementation of the 2005 LRDP. This includes lands under active cultivation, and those that are fallow due to either crop rotation techniques, or the anticipation of development in the future. However, the LRDP reserves an approximately 37-acre parcel at the western edge of the West Campus (northeast of the intersection of Chicago Avenue and Martin Luther King Boulevard) as a reserve for future land uses, and existing agricultural production lands would remain. In addition, agricultural uses on campus south of Martin Luther King Boulevard would remain. The 2005 LRDP includes Planning Strategies *Open Space 1, 2, 3* and *4* and *Conservation 1* and *2*, described under Impact 4.9-1 aimed at minimizing impacts to biological resources on campus. LRDP Planning Strategies *Open Space 1* and *2* require that the natural hillsides on the southeast campus area be preserved, and stipulate no major facilities be allowed there (except for sensitively sited utility projects). LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat and foraging values be restored. LRDP Planning Strategy *Open Space 4* provides for landscaped buffers and setbacks along campus edges, which is intended to reduce the loss of existing biological resources in those areas. LRDP Planning Strategy *Conservation 1* specifies that native habitat, including native grasslands, and mature trees be preserved to the extent feasible, while *Conservation 2* ensures that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.

As discussed in the analysis of impacts to biological resources, Impact 4.4-1, potential impacts to candidate, sensitive, or special status plant and wildlife species would be reduced a less-than-

significant level by ensuring preservation or relocation or affected species or the preservation or restoration of equivalent habitat. This would be achieved through LRDP Planning Strategies identified above, PP 4.4-1(a) and PP 4.4-1(b); and MM 4.4-1(a) and MM 4.4-1(b), as detailed in Section 4.4. Therefore, the 2005 LRDP is consistent with this policy

Policy 3.21 Encourage the implementation of measures aimed at the preservation and protection of the recorded and unrecorded cultural resources and archaeological sites.

Consistency Analysis. Various historic-era buildings on campus are eligible or potentially eligible for listing on the NRHP and/or CRHR, and the campus has continued to preserve and enhance these structures and connecting open spaces. The proposed project includes Planning Strategy *Conservation 4*, described under Impact 4.9-1, would preserve historic buildings to the extent feasible.

The 2005 LRDP could include renovations (particularly seismic renovations) to historic structures. Seismic renovation would be completed in consultation with SHPO and under the authoritative guidance provided in *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Illustrated Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Weeks and Grimmer 1995). Renovation projects that would occur during implementation of the 2005 LRDP would be conducted with the consultation and guidance, as required by MM 4.5-1.

Section 4.5 (Cultural Resources) also includes PP 4.5-3 and PP 4.5-5, which address avoidance and protection of historic and potentially historic structures, archaeological resources, and paleontological resources, as well as MM 4.5-1 and MM 4.5-2 to mitigate impacts to such resources, if impacts occur. With implementation of these measures and/or existing campus Programs and Practices, the 2005 LRDP is consistent with this policy.

Policy 3.22 Discourage development, or encourage the use of special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards.

Consistency Analysis. Implementation of the 2005 LRDP would result in the construction of new development on campus, an area where seismic hazards could occur. However, 2005 LRDP PP 4.6-1(a) requires preparation of a site-specific geotechnical study (including engineering recommendations to mitigate potential seismic-related impacts) to address these effects. Compliance with the Uniform Building Code (UBC), California Building Code (CBC), and the University Policy on Seismic Safety would also minimize the effects of strong groundshaking by designing new buildings to specified design requirements. Therefore, implementation of the 2005 LRDP would be consistent with this policy as it relates to seismic hazards, as further described in Impact 4.6-1 in Section 4.6 (Geology and Soils) of this document.

Portions of the campus that are within a 100-year flood hazard area include areas along the University Arroyo, along Box Springs Road, North Campus Drive, the Lower Intramural Fields, Parking Lot 13 and Visitor Lot 10, and the Gage Basin north of University Avenue. In addition, areas adjacent to the Box Springs Arroyo, in the agricultural teaching and research fields south of Martin Luther King Boulevard are also subject to flooding. The only areas of the campus within

the 100-year flood area that are designated for future development are the Lower Intramural Fields, Parking Lot 13, and Visitor Lot 10, which are identified for future development of academic buildings. The extent of the 100-year floodplain is expected to decrease as a result of implementation of flood control improvements anticipated for implementation by the Campus and the City. However, if improvements are not implemented, MM 4.8-9 (a) and MM 4.8-9(b) would require use of special design requirements identified by FEMA in order to reduce impacts associated with flood flows in the 100-year flood hazard area, if campus improvements are not implemented that would reduce the extent of the 100-year flood hazard area, as discussed in Section 4.8 (Hydrology and Water Quality) of this document.

The southeast hills is a natural area that is susceptible to wildland fires. Development in areas in proximity to the southeast hills could expose people or structures to wildland fires. MM 4.7-8(a) and MM 4.7-8(b) include special design requirements to reduce risks associated with wildland fires. There are no areas on campus specifically identified for development that include steep slopes. Nevertheless, PP 4.4-3 includes provisions to minimize clearing and disturbing sensitive areas including steep slopes, if they are present, as discussed in Section 4.7 (Hazards and Hazardous Materials) of this document.

With implementation of these campus Programs and Practices and Mitigation Measures, the campus provides special design requirements, in areas with steep slopes, high fire, flood, and seismic hazards, and is consistent with this policy.

Policy 3.23 Encourage mitigation measures that reduce noise in certain locations, measures aimed at preservation of biological and ecological resources, measures that would reduce exposure to seismic hazards, minimize earthquake damage, and develop emergency response and recovery plans.

Consistency Analysis. Planning Strategies in the 2005 LRDP that demonstrate UCR's commitment to protection of natural resources include Planning Strategies *Open Space 1, 2, 3,* and *4*, and Planning Strategies *Conservation 1, 2,* and *3*, described under Impact 4.9-1. LRDP Planning Strategies *Open Space 1* and *2* require that the natural hillsides on the southeast campus area be preserved, and stipulate no major facilities be allowed there (except for sensitively sited utility projects). LRDP Planning Strategy *Open Space 3* ensures that existing landforms, native plant materials, and trees are preserved, when feasible, and where appropriate, habitat and foraging values be restored. LRDP Planning Strategy *Open Space 4* provides for landscaped buffers and setbacks along campus edges, which is intended to reduce the loss of existing biological resources in those areas. LRDP Planning Strategy *Conservation 1* specifies that native habitat, including native grasslands, and mature trees be preserved to the extent feasible, while *Conservation 2* ensures that buildings be sited to minimize site disturbance, reduce erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible. LRDP Planning Strategy *Conservation 3* ensures that buildings be preferably sited in higher density areas to preserve open space and conserve limited land resources and agricultural fields, as discussed in Section 4.9 (Land Use) of this document.

Implementation of the 2005 LRDP could increase the number of noise sources at the campus. These sources would include additional motor vehicles, new stationary sources (such as rooftop heating, ventilation, and air conditioning equipment), and increased human activity throughout the campus. These additional sources are not expected to expose people to severe noise levels or cause a substantial increase in ambient noise levels as discussed in Section 4.10. Adherence to Planning Strategies, Programs and Practices, and Mitigation Measures ensures that these potential noise impacts are reduced to the maximum extent possible.

Under the 2005 LRDP, noise would continue to be generated during the construction of the new campus buildings. These activities could increase noise levels at nearby on-campus buildings. Off-campus homes border the campus in several locations, although they are separated from the campus by busy roadways except on the east. Construction activities would not increase noise levels at most of these homes by a substantial amount. Programs and Practices, including PP 4.10-7(a) through (d) and 4.10-8, related to placement and muffling of construction equipment, ensures that these potential noise impacts are reduced to the maximum extent possible.

The 2005 LRDP contains a number of measures aimed at a preservation of biological and ecological resources, as detailed in Section 4.4. In addition to the LRDP Planning Strategies for Conservation and for Open Space described above, MM 4.4-1(a) and MM 4.4-1(b) would protect special status plants and animals found or occurring on campus, including the coastal sage scrub, riparian, annual grasslands, and ruderal grasslands. To protect wetland habitat, MM 4.4-3(a) would require 1:1 replacement of removed wetland habitat, and MM 4.4-3(b) would require measures to assure that wetland-dependent species are introduced into the replacement habitat. MM 4.4-4(a) and MM 4.4-4(b) would mitigate the substantial interference with protected migratory birds and raptors that could result from the destruction of mature trees during the breeding season. These Mitigation Measures and Planning Strategies would reduce impacts from development under the 2005 LRDP and are consistent with SCAG Policy 3.23.

As discussed under the consistency discussion for Policy 3.22 above the 2005 LRDP would result in the construction of new development on campus, an area where seismic hazards could occur. However, 2005 LRDP PP 4.6-1(a) requires preparation of a site-specific geotechnical study (including engineering recommendations to mitigate potential seismic-related impacts) to address these effects. Compliance with the Uniform Building Code (UBC), California Building Code (CBC), and the University Policy on Seismic Safety would also minimize the effects of strong groundshaking by designing new buildings to specified design requirements.

The campus implements emergency prevention programs, practices, and procedures and is also responsible for training UCR staff and building coordinators on emergency procedures and safety techniques. UCR Environmental Health & Safety (EH&S) periodically conducts review sessions with the Emergency Service, Hazardous Materials, and Public Safety Units of the Riverside Fire Department to review the campus Emergency Operations Plan, Energy Systems Facility Risk Management Plan, and Business Plan. EH&S periodically conducts emergency drills in campus facilities on an ongoing basis, in coordination with individual building safety coordinators. With

implementation of these campus Programs and Practices, which include PP 4.7-7(a) and 4.7-7(b), the campus would provide adequate emergency response and recovery plans. The 2005 LRDP is therefore consistent with this policy.

Policy 3.24 Encourage efforts of local jurisdictions in the implementation of programs that increase the supply and quality of housing and provide affordable housing.

Consistency Analysis. Planning Strategy *Land Use 4* identifies the goal of housing 50 percent of student enrollment in campus-controlled housing. The 2005 LRDP projects development of an additional 8,621 beds for student housing, addressing an unmet need for on-campus housing. The 2005 LRDP will, therefore, increase the supply of affordable student housing on campus, and is consistent with this policy.

Policy 3.27 Support local jurisdictions and other service providers in their efforts to develop sustainable communities and provide, equally to all members of society, accessible and effective services such as public education, housing, health care, social services, recreational facilities, law enforcement, and fire protection.

Consistency Analysis. A key operational planning objective in the 2005 LRDP is to the extent practicable, to create a regional model of planning, design, and environmental stewardship, protecting the natural environment and incorporating sustainable planning and design practices.

Planning Strategies in the 2005 LRDP promote the principles of sustainability, such as the efficient use of energy through compliance with Title 24 standards, protection of natural resources, and providing and promoting opportunities for the use of alternative transportation modes. The campus has instituted and maintained conservation and recycling programs, which are described in Section 4.15 (Utilities) and has substantially reduced the campus reliance on these service systems.

The University of California is directed by the Master Plan for Higher Education in California to provide instruction in the liberal arts and sciences. It is also one of the primary State-supported academic agencies for research in agricultural sciences. UCR's mission within this context is to offer teaching, research, and service programs of the highest quality to serve the needs of the Riverside region, the State of California, and the nation. To support this mission, the campus provides associated housing facilities for students, health care services, social services, recreational facilities available to the general public (with purchase of a recreational card) and law enforcement and police protection on campus. RFD Fire Station 4 is located at 3510 Cranford Avenue, which is 0.5 miles from the campus, and provides campus fire protection services in addition to other nearby stations as necessary. Therefore, the 2005 LRDP is consistent with this policy.

Regional Mobility Chapter

Policy 4.01 Transportation investments shall be based on SCAG's adopted Regional Performance Indicators (which are listed below).

Mobility—Transportation Systems should meet the public need for improved access, and for safe, comfortable, convenient, faster, and economical movements of people and goods.

- Average Work Trip Travel Time in Minutes—25 minutes (Auto)

- P.M. Peak Freeway Travel Speed—45 minutes (Transit)
- P.M. Peak Nonfreeway Travel Speed (performance indicators not given)
- Percent of P.M. Peak Travel in Delay (Freeway) (performance indicators not given)
- Percent of P.M. Peak Travel in Delay (Nonfreeway) (performance indicators not given)

Accessibility—Transportation system should ensure the ease with which opportunities are reached. Transportation and land use measures should be employed to ensure minimal time and cost.

- Work Opportunities within 45 minutes door to door travel time (Mode Neutral)
- Average transit access time (performance indicators not given)

Environment—Transportation system should sustain development and preservation of the existing system and the environment (All Trips).

- CO, VOC, NOx, PM_{10}, $PM_{2.5}$—Meet the applicable SIP Emission Budget and the Transportation Conformity requirements

Reliability—Transportation system should have reasonable and dependable levels of service by mode (All Trips)

- Transit—63 percent
- Highway—76 percent

Safety—Transportation systems should provide minimal accidents, death, and injury (All Trips)

- Fatalities per Million Passenger Miles—0
- Injury Accidents—0

Equity/Environmental Justice—The benefits of transportation investments should be equitably distributed among all ethnic, age and income groups (All Trips)

- By Income Groups Share of Net Benefits—Equitable Distribution of Benefits among all Income Quintiles

Cost-Effectiveness—Maximize Return on Transportation Investment (All Trips). Air Quality, Mobility, Accessibility, and Safety

- Return on Total Investment—Optimize Return on Transportation Investments

See consistency analysis under Policy 4.16 immediately below.

Policy 4.02 Transportation investments shall mitigate environmental impacts to an acceptable level.

See consistency analysis under Policy 4.16 immediately below.

Policy 4.04 Transportation Control Measures shall be a priority.

See consistency analysis under Policy 4.16 immediately below.

Policy 4.16 Maintaining and operating the existing transportation system will be a priority over expanding capacity.

Consistency Analysis. Implementation of the 2005 LRDP would not interfere with SCAG's ability to implement any of the identified transportation policies and meet the numerical standards

identified above. It is not within the jurisdiction of the campus to ensure that these numerical standards are met. However, UCR Transportation and Parking Services (TAPS) develops and implements state-of-the-art and cost-effective products that anticipate and respond to the full range of campus transportation, parking, commuter, mobility, and environmental challenges and supports SCAG's achievement of the adopted Regional Performance Indicators. UCR's TAPS continually assesses the campus transportation program with a view toward improved access and safe, comfortable, convenient, faster, and economical use. The consistency analysis for Policy 3.12 includes a full description of the campus TDM program. As noted, as part of its TDM program, UCR actively provides and promotes vanpools, carpool matching and parking incentive programs, financial incentives for carpool and vanpool participants, and accommodation of the use of other modes of transit, all of which promote mobility, cost-effectiveness, and accessibility, as well as environmental sustainability by reduction in vehicle trips. The campus transportation system, both infrastructure and operations, is designed to maximize safety for all patrons.

The TDM program encourages the use of alternative modes of transportation for students, faculty, staff, and visitors and integrates the regional transit system with the campus. This integration facilitates SCAG's policy of maintaining and operating the existing transportation system. It is available to all students, faculty, and staff without regard to ethnicity, age, or income level. Opportunities for telecommuting are provided wherever feasible. This program encourages the use of transit, reduces the number of vehicle trips and miles traveled, and creates further opportunities for alternative transportation. Thus, the TDM program enhances the regional transportation system and is consistent with the SCAG policies outlined above.

2005 LRDP Planning Strategy *Transportation 1* calls for an integrated multi-modal transportation plan to encourage walking, biking, and transit use. Feasible mitigation measures will be implemented as part of the 2005 LRDP to reduce transportation impacts as a result of development under the 2005 LRDP. Planning Strategy *Land Use 4* identifies provision of 50 percent of student enrollment in on-campus or campus-controlled housing. Existing Programs and Practices provide that the campus shall continue to implement a TDM program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD (refer to PP 4.14-1). Continued implementation of campus transportation programs and implementation of these existing campus Programs and Practices would minimize the impacts of the 2005 LRDP on transportation services.

The development and increased campus population would be supported by the existing transportation network serving the City of Riverside and the southern California region. Therefore, the 2005 LRDP would be consistent with these policies.

As discussed later in this consistency analysis, the 2005 LRDP is consistent with the 1997 South Coast Air Quality Management Plan (AQMP) and the 1999 Amendment. The AQMP serves as the South Coast Air Basin portion of the State Implementation Plan (SIP). Therefore, the 2005 LRDP is also consistent with the emissions budgets of the SIP.

Air Quality Chapter

Policy 5.07 Determine specific programs and associated actions needed (e.g., indirect source rules, enhanced use of telecommunications, provision of community based shuttle services, provision of demand management based programs, or vehicle-miles-traveled/emission fees) so that options to command and control regulations can be assessed.

Consistency Analysis. As noted above in the discussions of SCAG Policies 3.12 and 4.01, the UCR campus has implemented a TDM Program that offers a broad range of services to encourage and assist UCR commuters in utilizing alternatives to the single-occupancy vehicle. As part of its ongoing TDM Program, UCR actively provides and promotes: vanpools; carpool matching and parking incentive programs; financial incentives for carpool and vanpool participants; accommodation of the use of other modes of transit, including bicycles, motorcycles, and scooters; alternative work schedules and telecommuting; and parking control management.

The LRDP contains specific planning objectives aimed at reducing vehicle miles traveled and providing alternative methods of transportation, as well as land use policies integrating walkways with building design to encourage use through placement and design. These planning principles would serve to encourage use of transit, reduce the number of vehicle trips and miles traveled, and create further opportunities for campus students, faculty, and staff to walk and bike to class and work. Therefore, the 2005 LRDP is consistent with this policy.

Policy 5.11 Through the environmental review process, ensure that plans at all levels of government (regional, air basin, County, subregional and local) consider air quality, land use, transportation, and economic relationships to ensure consistency and minimize conflicts.

Consistency Analysis. The 2005 LRDP EIR fully addresses air quality, land use, and traffic and circulation impacts resulting from construction and operation of the 2005 LRDP and considers all relevant planning documents, such as the Air Quality Management Plan, the Congestion Management Program, and the 2005 LRDP itself.

Water Quality Chapter

Policy 11.07 Encourage water reclamation throughout the region where it is cost-effective, feasible, and appropriate to reduce reliance on imported water and wastewater discharges. Current administrative impediments to increased use of wastewater should be addressed.

Consistency Analysis. No reclaimed water infrastructure exists on the Riverside campus, nor are plans currently in place for the provision of reclaimed infrastructure to the area. Therefore, a reclaimed water system on campus is currently not feasible. If reclaimed water infrastructure becomes available during the planning horizon of the 2005 LRDP, the campus will evaluate its feasibility in terms of cost-effectiveness and environmental sustainability, and will endeavor to use reclaimed water where appropriate.

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. The campus is situated over the Riverside-Arlington Groundwater subbasin, for which the Basin Plan has not specifically designated water quality objectives. However, as noted in Section 4.8 (Hydrology and Water Quality), 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, implementation of the 2005 LRDP would be consistent with the Basin Plan and the Porter-Cologne Water Quality Control Act.

Western Riverside County Multi-Species Habitat Conservation Plan (MSHCP)

As stated earlier in Section 4.4 Biological Resources, in order 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 1.2 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. Cells 634 and 719 do include portions of the southeastern campus. Conservation within these cells focuses on upland scrub and coastal sage scrub habitats that are found in the hills southeast of the campus.

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 surrounding 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 for conservation. However, the 2005 LRDP includes a range of Planning Strategies that ensure the preservation of the coastal sage habitat in the southeast hills as a *Natural* Open Space Reserve and protects the *Naturalistic* open space areas on campus, which include riparian habitat in on-campus arroyos. Therefore, implementation of the LRDP would be in substantial conformance with local applicable policies protecting biological resources. This information is also discussed under 4.4.3 Regulatory Framework, and under Impact 4.4-6 in Section 4.4 Biological Resources.

South Coast Air Quality Management District, Air Quality Management Plan (AQMP)

The SCAQMD is directly responsible for reducing emissions from stationary (area and point), mobile, and indirect sources within the South Coast Air Basin (Basin). It has responded to this requirement by preparing a series of Air Quality Management Plans (AQMPs). The most recent of these was adopted by the Governing Board of the SCAQMD on November 16, 1996. This AQMP, referred to as the 1997 AQMP, was prepared to comply with the federal and State Clean Air Acts and amendments, to accommodate growth, to reduce the high pollutant levels in the Basin, to meet federal and State air quality standards, and to minimize the fiscal impact that pollution control measures have on the local economy. An amendment to the ozone portion of the 1997 AQMP was adopted by the Governing Board on December 10, 1999. Principal control measures of the AQMP focus on adoption of new regulations or enhancement of existing regulations for stationary sources as well as implementation/facilitation of advanced transportation technologies (i.e., telecommunication, zero emission and alternative-fueled vehicles and infrastructure, and both capital and noncapital transportation improvements). Capital improvements consist of high-occupancy vehicle (HOV) lanes; transit improvements; traffic flow improvements; park-and-ride and intermodal facilities; and urban freeway, bicycle, and pedestrian facilities. Noncapital improvements consist of rideshare matching and transportation demand management activities derived from the congestion management program.

The future air quality levels projected in the 1997 AQMP and the 1999 Amendment 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 RCPG. The AQMP also assumes that general development projects will include strategies (i.e., mitigation measures) to reduce emissions generated during construction and operation.

Consistency with the projections of employment and population forecasts identified in the Growth Management Chapter of the RCPG constitutes consistency with the AQMP growth projections, since the Growth Management Chapter forms the basis of the land use and transportation control portions of the AQMP. The projected growth in campus population by 2015 is within the SCAG projections through growth rate assumptions, since the LRDP would serve future growth in the region (personal communication Jihong McDermott, SCAG). 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 3.12, 3.13, 3.14, 3.16, and 5.07 of the RCPG, the 2005 LRDP represents infill development on a developed campus, utilizing existing infrastructure and public service

systems. 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 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.

The 2005 LRDP EIR fully addresses air quality impacts resulting from construction and operation of the 2005 LRDP and recommends Mitigation Measures 4.3-2 and 4.3-3 to reduce the potentially significant impacts. Based on this information, the 2005 LRDP is consistent with the 1997 AQMP and the 1999 Amendment. AQMP consistency is also discussed in Section 4.3, Air Quality under the discussion of Regulatory Framework and Impact 4.3-1.

As the 2005 LRDP 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*.

Threshold	Would the proposed project conflict with any applicable habitat conservation plan or natural community conservation plan?

Impact 4.9-3 **Implementation of the 2005 LRDP would not conflict with any applicable habitat conservation plan or natural community conservation plan and *no impact* would result.**

As discussed in Impact 4.4-6 in Section 4.4 (Biological Resources) of this EIR, implementation of the LRDP would not conflict with any applicable habitat conservation plan or natural community conservation plan and, and *no impact* would result.

4.9.5 Cumulative Impacts

The geographic context for the analysis of cumulative land use and planning impacts includes that portion of the City of Riverside immediately surrounding the 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 and development of off-campus related projects, as discussed in Section 4.0 (Introduction to Environmental Analysis).

It is anticipated that growth within the City, including identified off-campus related projects, 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). However, it is assumed that future off-campus development 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. Specific related projects

include office, restaurant, and residential development, which would generally be compatible with the residential-commercial character of the area. It is possible that cumulative impacts on land use compatibility might occur with respect to one or more of the related projects (or unknown future projects permitted in the area) due to specific issues associated with these projects or their location. Based on the number, type, and geographic dispersion of specific development projects currently underway in the vicinity of the campus, it is unlikely that the cumulative land use impacts would be cumulatively considerable.

Future off-campus development 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 development with adopted plans and policies would not be significant. Even if the cumulative land use impact of these projects would be significant, the contribution of the 2005 LRDP to such impacts is not cumulatively considerable. Development under the 2005 LRDP would be compatible with the 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 project would therefore not result in a cumulatively considerable contribution to this impact and is also consistent with applicable plans, policies, and regulations. As a result, the contribution of the 2005 LRDP to any cumulative impacts are less than significant.

4.9.6 References

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4.10 NOISE

4.10.1 Introduction

This section evaluates the potential noise impacts resulting from implementation of the 2005 LRDP. This includes the potential for the 2005 LRDP to cause a substantial temporary and/or permanent increase in ambient noise levels within or around the campus, or to expose people to excessive noise levels. The purpose of this analysis is to evaluate the 2005 LRDP in terms of its planning to ensure that new uses are planned appropriately from a noise perspective and to evaluate the noise impacts of the 2005 LRDP on the surrounding community.

Data used in the preparation of this section were taken from various sources, and were obtained by measuring and modeling existing and future noise levels at the campus and in the surrounding area. Bibliographic entries for reference materials appear in Section 4.10.6 (References) of this section.

Four comment letters related to noise were received on the Notice of Preparation circulated for the project. Commenters requested that the EIR address noise impacts from planned growth, including impacts from trucks and from the proposed parking structure planned for Lot 13. The Notice of Preparation, those responses written to the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.10.2 Existing Conditions

Fundamentals of Sound and Environmental Noise

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel ("dB"). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale ("dBA") provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady "background" noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 4.10-1 (Representative Environmental Noise Levels) lists representative noise levels for the environment.

Table 4.10-1 Representative Environmental Noise Levels

Common Outdoor Activities	*Noise Level (dBA)*	*Common Indoor Activities*
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation 1998

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the total acoustical energy content of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are as follows:

- L_{eq}—The equivalent energy noise level, is the average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
- *CNEL*—The Community Noise Equivalent Level, is a 24-hour average L_{eq} with a 10 dBA "penalty" added to noise during the hours of 10:00 P.M. to 7:00 A.M., and an additional 5-dBA penalty during the hours of 7:00 P.M. to 10:00 P.M. to account for noise sensitivity in the evening and nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
- L_{min}—The minimum instantaneous noise level experienced during a given period of time

- L_{max}—The maximum instantaneous noise level experienced during a given period of time

Noise environments and consequences of human activities are usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated natural settings that can provide noise levels as low as 20 dBA, and quiet suburban residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can disrupt sleep. Examples of low-moderate level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with more noisy urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA).

When evaluating changes in 24-hour community noise levels, a difference of 3 dBA is a barely-perceptible increase to most people (FHWA 1980). A 5-dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness (FHWA 1987). Except in a carefully controlled laboratory condition, a change of 1 dBA is very difficult to perceive.

Noise levels from a particular source generally decline as distance to the receptor increases. Other factors such as the weather and reflecting or shielding also help intensify or reduce the noise level at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically "hard" locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically "soft" locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels are also generally reduced by 1 dBA for each 1,000 of distance due to air absorption. Noise levels may also be reduced by intervening structures—generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20 dBA with closed windows. The exterior-to-interior reduction of newer homes is generally 30 dBA or more.

Fundamentals of Environmental Groundborne Vibration

Vibration is sound radiated through the ground. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. The ground motion caused by vibration is measured as particle velocity in inches per second and in the U.S. is referenced as vibration decibels (VdB).

The background vibration velocity level in residential and educational areas is usually around 50 VdB (FRA 1998). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity level of 75 VdB is the approximately 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. 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 rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, and 100 VdB, which is the general threshold where minor damage can occur in fragile buildings (FRA 1998).

The general human response to different levels of groundborne vibration velocity levels is described in Table 4.10-2 (Effects of Various Groundborne Vibration Levels on People and Buildings).

Table 4.10-2 Effects of Various Groundborne Vibration Levels on People and Buildings

Vibration Velocity Level	*Human Reaction*
65 VdB	Approximate threshold of perception for many people.
75 VdB	Approximate dividing line between barely perceptible and distinctly perceptible. Many people find that transportation-related vibration at this level is unacceptable.
85 VdB	Vibration acceptable only if there are an infrequent number of events per day.

Source: Federal Railroad Administration 1998

Noise Analysis Methodology

The analysis of the existing and future noise environments presented in this analysis is based on noise level monitoring, noise prediction modeling, and empirical observations. Existing noise levels were monitored at selected locations within the campus and surrounding area using a Larson-Davis Model 720 precision sound level meter, which satisfies the American National Standards Institute ("ANSI") for general environmental noise measurement instrumentation. Noise modeling procedures involved the calculation of existing and future vehicular noise levels along individual roadway segments in the site vicinity. This task was accomplished using the Federal Highway Administration (FHWA) Highway Noise Prediction Model (FHWA-RD-77-108). The model calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. The average vehicle noise rates (energy rates) utilized in the FHWA Model have been modified to reflect average vehicle noise rates identified for California by Caltrans (Hendriks 1987). The Caltrans data show that California automobile noise is 0.8 to 1.0 dBA higher than national levels and that medium and heavy truck noise is 0.3 to 3.0 dBA lower than national levels (Hendriks 1987). Traffic volumes utilized as data inputs in the noise prediction model were provided by the project traffic engineer.

Existing Noise Levels

Land uses in the vicinity of the UCR campus are primarily residential, with some commercial uses along the major streets. To the north of the campus, the area is comprised of residential uses, open space and some industrial uses. To the east, the adjacent land uses are primarily single family residential, with the Box Springs Mountains further to the east. The southern border of the campus is generally defined by the I-215/SR-60 freeway and a line roughly following Le Conte Drive. To the south and west, residential

and some commercial uses are adjacent to the campus. The campus itself presently includes academic (institutional), office, student housing, recreational, parking, support, and agricultural uses. Although other noise sources occur in the vicinity, vehicular traffic is the primary source of noise within, and around, the campus.

Existing daytime noise levels were measured at twenty locations within and around the campus in order to identify representative noise levels in various areas. These locations are identified in Figure 4.10-1 (Noise Measurement Locations). The average noise levels and sources of noise measured at each location are identified in Table 4.10-3 (Existing Daytime Noise Levels at Selected Locations on Campus).

Table 4.10-3 Existing Daytime Noise Levels at Selected Locations on Campus

No.	Noise Measurement Location	Primary Noise Sources	Noise Level Statistics		
			L_{eq}	L_{min}	L_{max}
1	Central Quad near Commons	Students and Landscaping Equipment	57.7	54.1	68.6
2	West Campus Drive near Parking Lot 4	Traffic on I-215	68.5	62.3	82.8
3	West Campus Drive near Parking Lot 6	Traffic on I-215	63.6	57.4	82.5
4	In front of Citrus Experiment Station	Traffic on I-215	64.1	59.2	73.8
5	Citrus Drive near Physical Plant	Physical Plant Daily Operations	59.7	55.5	74.7
6	Outside Rivera Library	Students and Landscaping Equipment	57.9	53.0	69.6
7	Outside Watkins Hall	Students and Landscaping Equipment	55.9	52.1	68.1
8	Central Quad near Geology	Students and Landscaping Equipment	56.6	54.4	64.7
9	East Campus Drive near Glasshouses	Green House Equipment and Traffic on East Campus Drive	71.0	53.4	83.5
10	Aberdeen Drive near Residence Halls	Traffic on Aberdeen Drive	60.0	54.2	74.0
11	In Parking Lot 19 and Tennis Courts	Automobiles in Parking Lot 19	58.1	52.5	69.8
12	West Campus Drive near Administration	Traffic on I-215 and automobiles on West Campus Drive	71.5	66.3	80.9
13	Campus entrance off University Avenue	Traffic on University Ave.	66.9	54.6	80.9
14	Blaine Street west of Watkins Drive near Student Housing	Traffic on Blaine Street	63.4	51.5	76.5
15	Canyon Crest Drive near Family Housing	Traffic on Canyon Crest Drive	63.9	52.0	78.8
16	Near Parking Lot P30 west of I-215	Traffic on I-215	67.4	56.5	84.7
17	Chicago Avenue between Martin Luther King Boulevard and University Avenue	Traffic on Chicago Avenue	69.2	53.6	85.1
18	Everton Place across from Multi-Family Housing Units	Automobiles in UNEX Parking Structure and Landscaping Equipment	63.4	53.1	63.4
19	In front of 1350 Le Conte Road Adjacent to University Agriculture Property	Traffic on Le Conte Avenue	62.0	42.9	79.1
20	Canyon Crest Drive near entrance to Agricultural Operations	Traffic on Canyon Crest Drive	68.4	52.7	78.8

Source: EIP Associates 2002.

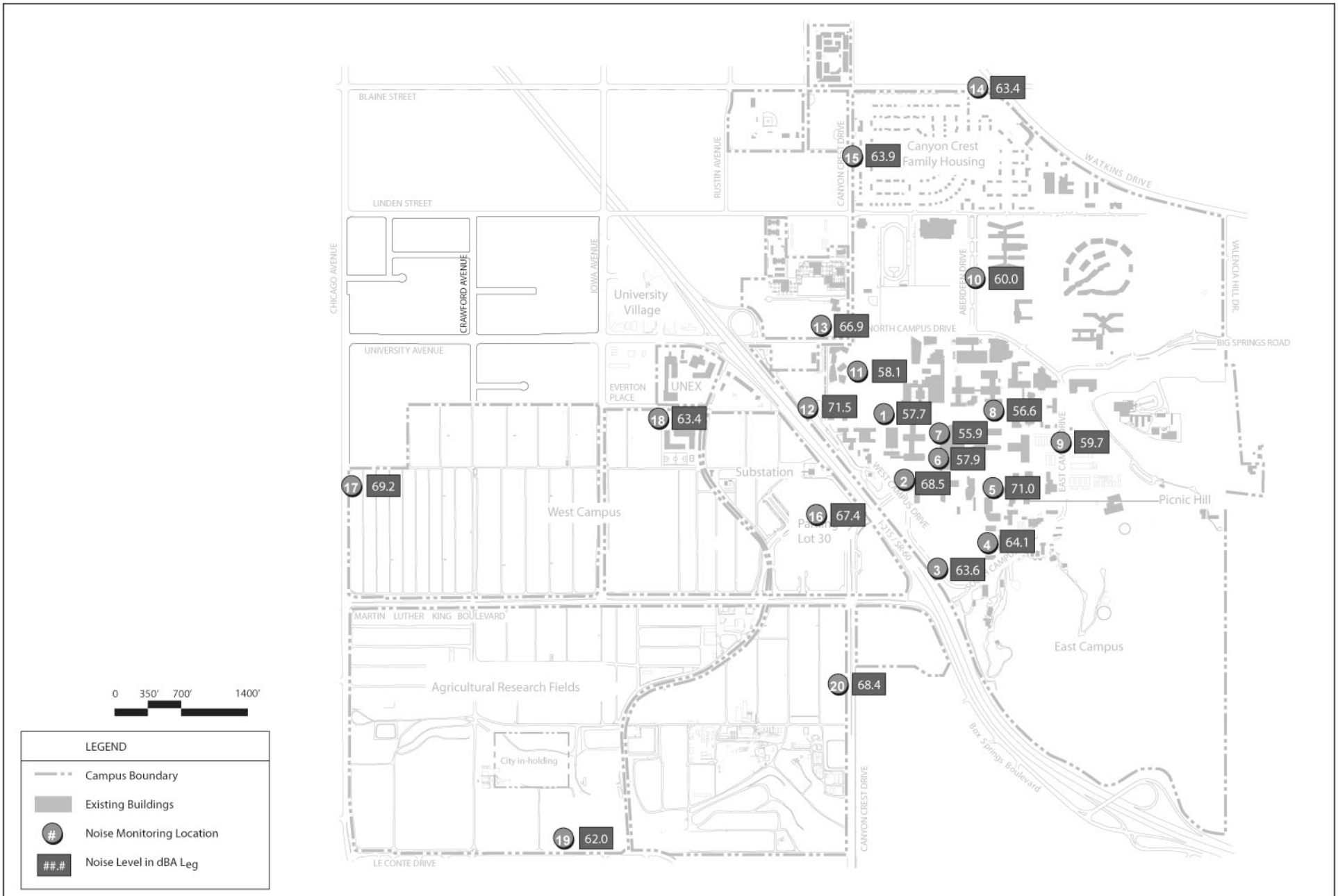

FIGURE **4.10-1**

Noise Measurement Locations

Scale: 1" = 1,400'

Source: EIP Associates, 2003; UC Riverside LRDP, 2005

UC Riverside

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EIP ASSOCIATES

Existing Roadway Noise Levels on Campus

Existing 24-hour noise levels have been calculated for the segment of the I-215/SR-60 freeway that bisects the campus and the various roadways around and within the campus. These noise levels are presented in Table 4.10-4 (Existing Roadway Noise Levels on Campus) along with the distances to various noise level contours.

Table 4.10-4 Existing Roadway Noise Levels on Campus

Roadway	Roadway Segment	CNEL at 75 Feet[1]	Distance to Noise Contour[1]		
			70 CNEL	65 CNEL	60 CNEL
I-215/SR-60 Freeway	south of University Avenue	83.8	627	1,351	2,912
Watkins Drive	south of Blaine Street	61.9	–[2]	47	101
	north of Gernert Road	62.5	–[2]	51	110
Canyon Crest Drive	south of Blaine Street	64.2	–[2]	67	143
	south of Pearblossom Drive	67.3	50	107	231
Iowa Avenue	south of Linden Street	68.6	61	131	282
Blaine Street	east of Iowa Avenue	65.3	–[2]	79	170
Martin Luther King Boulevard	east of Chicago Avenue	67.9	54	117	252

1. 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.
2. Noise contour is located within the roadway right-of-way.

Source: EIP Associates 2003. Calculation data and results are provided in Appendix J.

Existing Roadway Noise Levels Off Campus

Existing roadway noise levels were also calculated for the roadway links in the vicinity of the campus that have noise sensitive uses facing the roadways. The average daily noise levels along these roadway segments are presented in Table 4.10-5 (Existing Roadway Noise Levels off Campus).

Table 4.10-5 Existing Roadway Noise Levels off Campus

Roadway	Roadway Segment	Noise Sensitive Uses	dBA CNEL
Chicago Avenue	south of Martin Luther King Boulevard	Single-Family Residential	69.7
	south of Linden Street	Multi-Family Residential	68.7
	south of 3rd Street	School	68.2
Blaine Street	east of Iowa Avenue	Multi-Family Residential	67.3
	east of Canyon Crest Drive	Church	67.3
		Single-Family Residential	67.3
Watkins Drive	south of Blaine Street	Single-Family Residential	66.0
Iowa Avenue	south of Linden Street	Multi-Family Residential	69.9
	south of University Avenue	Multi-Family Residential	69.9
Canyon Crest Drive	south of Blaine Street	Multi-Family Residential	61.9

Source: EIP Associates 2003. Calculation data and results are provided in Appendix J.

Construction Noise

Construction of several new facilities is presently occurring within the UCR campus. Noise is generated on a daily basis 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.

The U.S. Environmental Protection Agency (U.S. EPA) has compiled data regarding the noise generating characteristics of specific types of construction equipment and typical construction activities. These data are presented in Table 4.10-6 (Noise Ranges of Typical Construction Equipment) and Table 4.10-7 (Typical Outdoor Construction Noise Levels). These noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 to 7.5 dBA per doubling of distance. For example, a noise level of 84 dBA measured at 50 feet from the noise source to the receptor would reduce to 78 dBA at 100 feet from the source to the receptor, and reduce by another 6 dBA to 72 dBA at 200 feet from the source to the receptor. The existing construction activities do not involve any actions such as pile driving or blasting that result in the generation of severe noise levels over a wide area.

Table 4.10-6 Noise Ranges of Typical Construction Equipment

Construction Equipment	*Noise Levels in dBA Leq at 50 feet* [a]
Front Loader	73–86
Trucks	82–95
Cranes (moveable)	75–88
Cranes (derrick)	86–89
Vibrator	68–82
Saws	72–82
Pneumatic Impact Equipment	83–88
Jackhammers	81–98
Pumps	68–72
Generators	71–83
Compressors	75–87
Concrete Mixers	75–88
Concrete Pumps	81–85
Back Hoe	73–95
Pile Driving (peaks)	95–107
Tractor	77–98
Scraper/Grader	80–93
Paver	85–88

Source: U.S. EPA 1971 as presented in City of Los Angeles 1998.

[a] Machinery equipped with noise control devices or other noise-reducing design features does not generate the same level of noise emissions as that shown in this table.

Table 4.10-7 Typical Outdoor Construction Noise Levels

Construction Phase	Noise Levels at 50 Feet (dBA L_{eq})	Noise Levels at 50 Feet with Mufflers (dBA L_{eq})
Ground Clearing	84	82
Excavation, Grading	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

Source: U.S. EPA 1971 as presented in City of Los Angeles 1998.

Special Event Noise

Noise is also generated by occasional special events at the UCR campus. These include daytime special events, such as athletic meets at the campus track and outdoor concerts within the center and recreational areas of the campus. The loudest of these special events are the outdoor concerts. Specific noise levels for each concert event cannot be defined since sound level expectations are different for various types of music, each act provides their own sound equipment, and each act selects the location of the speakers. In general, country music is presented at average sound levels in audience areas of approximately 90 dBA L_{eq}, while rock music typically averages sound levels of approximately 105 dBA L_{eq}. The noise levels generated by the special events on the East Campus primarily affect the educational, administrative, and student housing uses within the campus, although they could also be audible from residential neighborhoods to the north and west.

Existing Campus Noise Control

The existing noise levels within the campus and surrounding vicinity could be substantially higher except that the UCR campus 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

In order to provide a relatively quiet environment on the campus that is conducive to the educational process, noise-generating uses such as truck accesses, parking areas, and air conditioning/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 orientation are used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes.

Land Use Buffering

The UCR campus provides a landscaped buffer along the east edge of East Campus and south edge of West Campus (Valencia Hill Drive Landscape Buffer Area and Martin Luther King Boulevard Landscape Buffer Area). These buffers increase the distance between on-campus uses and the surrounding area and provide an acoustically soft environment to further reduce noise levels. They also reduce the noise levels

that are generated in the surrounding area (primarily roadway noise) that are heard within the main campus. Likewise, they reduce the noise levels that are generated within the main campus that are heard in the surrounding area.

Construction Noise Controls

When necessary, the UCR campus limits the hours of exterior construction activities from 7:00 A.M. to 9:00 P.M. Monday through Friday and 8:00 A.M. to 6:00 P.M. on Saturday. Transportation routes are prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.

Vehicular Traffic Noise Controls

The UCR campus is well served by several modes of alternative transportation, including public bus services and a campus-operated shuttle bus service. The campus also implements an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. The goal of 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. Programs and services are available to UCR faculty, staff, and students. While these programs were not implemented 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 the UCR campus. By reducing the number of potential motor vehicle trips, the potential noise levels that could be experienced in the surrounding vicinity are, likewise, reduced.

Existing Groundborne Vibration Environment

Aside from seismic events, the greatest regular sources of groundborne vibration at the UCR campus and within the immediate vicinity are construction activities and roadway truck traffic. At the time that this EIR was prepared, no construction activities likely to generate high groundborne vibration velocity levels (e.g., demolition, pile driving, or blasting) were occurring. Table 4.10-8 (Vibration Source Levels for Construction Equipment) identifies various vibration velocity levels for the types of construction equipment that have operated on the campus.

Table 4.10-8 Vibration Source Levels for Construction Equipment

Construction Equipment	*Approximate VdB*				
	25 Feet	*50 Feet*	*60 Feet*	*75 Feet*	*100 Feet*
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration 1998; EIP Associates 2003

Heavy trucks that transport materials to and from the construction sites within the UCR 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.

4.10.3 Regulatory Framework

Federal

Federal agencies that have developed noise standards include the Federal Highway Administration (FHWA), the Department of Housing and Urban Development (HUD), the Federal Interagency Committee on Urban Noise (FICUN), and the Federal Aviation Administration (FAA). None of these federal noise standards are applicable to the UCR campus.

State

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establishes 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 dBA 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 ten years from the time of building permit application. This standard applies to all new student housing developed within the UCR campus.

4.10.4 Project Impacts and Mitigation Measures

Methodology

The analysis in this section focuses on the nature and magnitude of the change in the noise environment due to development under the 2005 LRDP. The primary sources of noise associated with the 2005 LRDP would be construction activities and campus-related 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. Noise levels associated with increased traffic and on-campus equipment and activities are identified and compared with standards of significance to determine whether substantial permanent increases in ambient noise levels would occur. Future noise levels within the campus have also been identified to assess the compatibility of the proposed land uses under the 2005 LRDP with the existing noise environment.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on noise if it would result in any of the following:

- Exposure of 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
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- 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 two 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 dormitories) is 45 dBA 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 vibration impact thresholds for sensitive buildings, residences, and institutional land uses. 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 1998).

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 dBA L_{eq} or more over a one-hour period at any on-campus or off-campus noise-sensitive location.
- A permanent (i.e., long term operational) increase of 5 dBA 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 dBA 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 dBA CNEL (i.e., the noise levels would be considered unacceptable for noise-sensitive uses by most public agencies).

As discussed previously in this section, a noise level increase of 3 dBA is barely perceptible to most people, a 5-dBA increase is readily noticeable, and a difference of 10 dBA would be perceived as a doubling of loudness.

Effects Not Found to Be Significant

Threshold	If the project is located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airstrip, would it expose people residing or working in the project area to excessive noise levels?

The UCR campus is not located within an airport land use plan study area, or within two miles of a public airport or public use airport. The Initial Study consequently concluded that no impacts associated with implementation of the 2005 LRDP would occur with respect to noise associated with any public airport or public use airstrip, and no additional analysis is required in this EIR.

Threshold	For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

The UCR campus is not located within the vicinity of a private airstrip. Therefore, the Initial Study determined that no impacts associated with implementation of the 2005 LRDP would occur with respect to noise associated with any private airstrip, and no additional analysis is required in this EIR.

Impacts and Mitigation

Threshold	Would the project result in the exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Impact 4.10-1 **Implementation of the 2005 LRDP would not expose new on-campus student residential uses to noise levels in excess of the State's 45 dBA CNEL interior noise standard. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures, in addition to enrollment growth. The increase in the campus population would result in additional vehicular traffic on and around the campus. The development of additional facilities on the UCR campus and corresponding population increase would generate increased noise levels.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategy is relevant to the reduction of roadway noise levels measured at locations on campus:

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 for the 2005 LRDP, the campus will continue to implement the following existing campus Programs and Practices (PP) that would reduce potential impacts associated with construction and building siting and design:

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 L_{eq} during the day and 40 dBA L_{eq} 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) *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 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 L_{dn} 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.

Future noise levels within the campus would continue to be dominated by vehicular traffic on the I-215/SR-60 freeway and adjacent roadways. Other sources of noise would include new stationary sources (such as rooftop heating, ventilation, and air conditioning equipment) and increased human activity throughout the campus. Table 4.10-9 (Future Roadway Noise Levels on Campus) presents the future average daily noise levels associated with the freeway and these roadways.

Table 4.10-9 Future Roadway Noise Levels on Campus

Roadway	Roadway Segment	CNEL at 75 Feet[1]	Distance to Noise Contour [a]		
			70 CNEL	65 CNEL	60 CNEL
I-215/SR-60 Freeway	south of University Avenue	84.2	663	1,427	3,075
Watkins Drive	south of Blaine Street	65.7	39	84	180
	north of Gernert Road	65.3	—[b]	78	169
Canyon Crest Drive	south of Blaine Street	65.5	38	81	175
	south of Pearblossom Drive	70.8	85	184	396
Iowa Avenue	south of Linden Street	67.4	50	108	232
Blaine Street	east of Iowa Avenue	69.0	64	139	299
Martin Luther King Boulevard	east of Chicago Avenue	71.0	87	188	406

Source: EIP Associates 2003. Calculation data and results are provided in Appendix J.

[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.

New residential uses proposed under the 2005 LRDP are the residence halls and apartments on the East Campus and the family housing and apartments located on the West Campus. As discussed earlier in Section 4.10.1, while the exterior-to-interior reduction of newer residential units constructed in California is generally 30 dBA or more, noise levels within the proposed residential housing buildings could exceed the State's 45 dBA CNEL standard if the exterior noise levels average 75 dBA CNEL or more. All of the new residential buildings are proposed in areas located beyond the 70 dBA CNEL noise contour distances identified in Table 4.10-9.

Mechanical heating, ventilation, and air conditioning equipment might 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 dBA L_{eq} on the air inlet side and 62 dBA L_{eq} 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 dBA greater than 24-hour L_{eq} measurements. This means that this equipment could generate noise levels that average 69 to 73 dBA 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 dBA.

Based on this information, exterior noise levels around the student housing buildings would not approach 75 dBA CNEL and, therefore, interior noise levels within these buildings would not exceed 45 dBA CNEL. The 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*.

Threshold	Would the project result in the exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Impact 4.10-2 **The 2005 LRDP construction could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. Even with implementation of the relevant Programs and Practices and Mitigation Measure, this impact would be *significant and unavoidable*.**

Construction activities that would occur under the 2005 LRDP have the potential to generate low levels of groundborne vibration.

During the planning horizon for the 2005 LRDP, the campus will continue to implement the following existing campus Programs and Practices (PP) that would reduce potential impacts associated with construction and building siting and design:

PP 4.10-2 *The UCR campus shall limit the hours of exterior construction activities from 7:00 A.M. to 9:00 P.M. Monday through Friday and 8:00 A.M. to 6:00 P.M. 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 4.10-8 (Vibration Source Levels for Construction Equipment) previously identified various vibration velocity levels for the types of construction equipment that would operate at the campus during construction. This table does not show groundborne vibration velocity levels for actions such as pile driving or blasting, since they are not expected to occur at the campus during the implementation of the 2005 LRDP. 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 4.10-8, 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. So long as 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 sensitive research buildings, 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.

The following mitigation measure shall be continued throughout the 2005 LRDP planning horizon:

MM 4.10-2(a) *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.*

MM 4.10-2 represents the best management practice to minimize the impact of groundborne vibration near 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. The 2005 LRDP would result in the exposure of persons to groundborne vibration. Therefore, this impact would be ***significant and unavoidable***.

Impact 4.10-3 **The 2005 LRDP construction would not generate and expose persons off campus to excessive groundborne vibration or groundborne noise levels. This is considered a *less-than-significant* impact.**

The nearest off-campus residential uses are located at least one hundred feet from the nearest potential construction site within the main campus. Based on the information presented in Table 4.10-8, 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 residences. Therefore, construction during the implementation of the 2005 LRDP would not expose off-campus persons to excessive groundborne vibration or groundborne noise levels, and this impact would be *less than significant*. No mitigation is required.

Impact 4.10-4 **Operation of facilities built within the 2005 LRDP 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.**

When construction activities are not occurring at the campus, background operational vibration levels would be expected to average around 50 VdB, as discussed previously in this section. This is substantially less than the 65 VdB threshold for sensitive on-campus research buildings, 80 VdB at residences and student housing buildings, and 83 VdB at other institutional buildings. Therefore, operational activities during implementation of the 2005 LRDP would not expose on- or off-campus persons to excessive groundborne vibration or groundborne noise levels, and this impact would be *less than significant*. No mitigation is required.

Threshold	Would the project result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact 4.10-5 **Implementation of the 2005 LRDP would generate increased local traffic volumes, but would not cause a substantial permanent increase at on- or off-campus locations. With implementation of**

the relevant Programs and Practices, this impact would be *less than significant*.

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures, in addition to enrollment growth. The increase in the campus population would result in additional vehicular traffic on and around the campus. Noise levels would increase due to changes in motor vehicle trips to and from the campus.

During the planning horizon for the 2005 LRDP, the campus will continue to implement the following existing campus Programs and Practices (PP) that would mitigate vehicular traffic:

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.*

Locations in the vicinity of the campus could experience slight changes in noise levels as a result of an increase in the student and faculty population and resulting changes in motor vehicle trips to and from the campus. The changes in future noise levels at the selected noise-sensitive locations along the study-area roadway segments are identified in Table 4.10-10 (2005 LRDP Roadway Noise Impacts). As shown, the changes in motor vehicle trips and circulation patterns would increase local noise levels by a maximum of 3.5 dBA CNEL at one location. The maximum increase at any other location would be 2.5 dBA CNEL, which is inaudible/imperceptible to most people. Although roadway noise levels for specific on-campus locations are not identified in Table 4.10-10, the increase in noise levels identified for the roadway segments that border the main campus would be identical to those identified for the selected off-campus analysis locations in this table.

Because the roadway noise levels at all on- and off-campus locations would increase by less than 5 dBA CNEL, and by less than 3 dBA CNEL where the resulting noise level is 70 dBA CNEL or more, the 2005 LRDP would not generate increased local traffic volumes that cause a substantial permanent on- or off-campus increase in ambient noise levels in the project vicinity during the regular session. This impact would be *less than significant*.

Following PP 4.10-5(a) and PP 4.10-5(b) ensures 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. On-campus housing reduces the number of people that otherwise would need to commute to and from the campus to attend class. The Alternative Transportation program reduces the number of motor vehicle trips for campus employees. The 2005 LRDP would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, and impacts would be *less than significant*.

Table 4.10-10 2005 LRDP Roadway Noise Impacts

Roadway	*Roadway Segment*	*Noise Levels in dBA CNEL*			
		Future Without Project Traffic	*Future With Project Traffic*	*Increase*	*Significance Threshold*
Iowa Avenue between University Avenue and Martin Luther King Boulevard as a 2-lane Segment					
Chicago Avenue	south of Martin Luther King Boulevard	70.9	71.1	0.2	3.0
	south of Linden Street	70.5	70.8	0.3	3.0
	south of 3rd Street	69.8	70.4	0.6	3.0
Blaine Street	east of Iowa Avenue	68.4	70.9	2.5	3.0
	east of Canyon Crest Drive	68.5	70.8	2.3	3.0
		68.5	70.8	2.3	3.0
Watkins Drive	south of Blaine Street	67.0	67.6	0.6	5.0
Iowa Avenue	south of Linden Street	70.7	71.0	0.3	5.0
	south of University Avenue	69.3	69.9	0.6	5.0
Canyon Crest Drive	south of Blaine Street	63.0	66.5	3.5	5.0
Iowa Avenue between University Avenue and Martin Luther King Boulevard as a 4-lane Segment					
Chicago Avenue	south of Martin Luther King Boulevard	70.9	71.1	0.2	3.0
	south of Linden Street	69.9	70.1	0.2	3.0
	south of 3rd Street	69.4	69.8	0.4	5.0
Blaine Street	east of Iowa Avenue	68.4	70.9	2.5	3.0
	east of Canyon Crest Drive	68.5	70.8	2.3	3.0
		68.5	70.8	2.3	3.0
Watkins Drive	south of Blaine Street	67.0	68.2	1.2	5.0
Iowa Avenue	south of Linden Street	71.5	71.9	0.4	3.0
	south of University Avenue	71.9	72.6	0.7	3.0
Canyon Crest Drive	south of Blaine Street	63.0	66.5	3.5	5.0

Source: EIP Associates 2003. Calculation data and results are provided in Appendix J.

Impact 4.10-6 **Implementation of the 2005 LRDP could add new stationary source noise that could cause a substantial permanent on- or off-campus increase in ambient noise levels. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures. The new buildings and facilities would accommodate an increase in student enrollment and corresponding increase in the campus population. The development of additional facilities on the UCR campus would include new stationary sources of noise, such as rooftop heating, ventilation, and air conditioning (HVAC) equipment. This equipment would increase ambient noise levels in the project vicinity.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategy is relevant to the reduction of noise levels generated on campus and heard at locations off campus:

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.*

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.*

During the planning horizon for the 2005 LRDP, the campus will continue to implement the following existing campus Program and Practice that would reduce potential impacts associated with new stationary noise sources:

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.*

New stationary sources of noise, such as rooftop heating, ventilation, and air conditioning (HVAC) equipment, would be installed within the main campus under the 2005 LRDP. This equipment would be shielded and appropriate noise muffling devices installed to reduce noise levels that affect nearby on- and/or off-campus noise-sensitive uses. The type of HVAC equipment currently installed on new buildings within the campus generates noise levels that average around 66 dBA L_{eq} on the air inlet side and 62 dBA L_{eq} on the other sides when measured at 50 feet from the source. The shielding installed around all new equipment at the campus reduces these noise levels by around 15 dBA. Because existing noise levels within the campus currently average 54 to 69 dBA L_{eq}, the resulting equipment noise levels of less than 51 dBA L_{eq} at nearby buildings would not be expected to cause a substantial permanent increase in noise levels on campus of 5 dBA CNEL or more. 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 such, it would not cause a substantial increase in noise levels of 5 dBA CNEL or more. Following PP 4.10-6 reduces the noise levels generated by mechanical equipment and heard at noise-sensitive uses, and ensures the project would not result in a substantial permanent increase in ambient noise levels. This impact would be *less than significant*.

Threshold	Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Impact 4.10-7 **The 2005 LRDP construction could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. Even with implementation of the relevant Programs and Practices, this impact would be *significant and unavoidable*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures. The new buildings and facilities would accommodate an increase in student enrollment and corresponding increase in the campus population. The development of additional facilities on the UCR campus would result in construction activities and resulting construction noise on the campus. Construction activities are an existing and on-going source of noise at the UCR campus. In fact, construction of several new facilities is presently occurring at the campus.

During the planning horizon for the 2005 LRDP, the campus will continue to implement the following existing campus Programs and Practices (PP) that would minimize construction noise impacts to on-campus locations:

PP 4.10-7(a) *To the extent feasible, construction activities shall be limited to 7:00 A.M. to 9:00 P.M. Monday through Friday, 8:00 A.M. to 6:00 P.M. 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.*

Under the 2005 LRDP, noise would continue to 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. When construction is completed at one location, other buildings could be constructed or renovated. Because these activities would not occur at a single location over the planning horizon of the 2005 LRDP (that would affect the same receptors), these construction-related noise impacts are considered temporary.

Four basic types of activities would be expected to occur and generate noise during construction. First, some existing buildings within the campus would be demolished and existing surface features cleared. Following demolition, the development sites would be prepared (graded and/or excavated) to accommodate the new building foundations and surface features. The buildings and surface features would then be constructed and readied for use. Finally, the area around the new buildings would be landscaped. During each stage of development 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 Table 4.10-6 (Noise Ranges of Typical Construction Equipment) and Table 4.10-7 (Typical Outdoor Construction Noise Levels). These tables do not show noise levels for pile driving or blasting operations, since they are not expected to occur at the campus during the implementation of the 2005 LRDP. Classroom, office, and residential buildings are located in close proximity to areas within the main campus where development under the 2005 LRDP would occur. Construction noise levels could temporarily reach up to the 83 dBA L_{eq} level identified in Table 4.10-6 during the daytime at nearby on-campus buildings. This could be an increase of more than 10.0 dBA L_{eq} over the existing daytime noise levels at these buildings. As such, construction noise levels could substantially increase existing noise levels at on-campus classrooms, office, and residential uses. This would be a significant impact.

Continued implementation of existing campus Programs and Practices would not ensure that construction noise levels do not increase by less than 10 dBA at noise sensitive uses located in close proximity to the construction sites. No feasible mitigation has been identified. The 2005 LRDP would result in a substantial periodic increase in ambient noise levels in the project vicinity above existing levels. This impact would be ***significant and unavoidable***.

Impact 4.10-8 **The 2005 LRDP construction could result in substantial temporary or periodic increases in ambient noise levels at locations off campus. Even with implementation of the relevant Programs and Practices, this impact would be *significant and unavoidable*.**

During the planning horizon for the 2005 LRDP, the campus will continue to implement the following existing campus Programs and Practices (PP) that would reduce potential impacts associated with construction noise:

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.*

Off-campus residential uses that are located at least 100 hundred feet from potential construction sites within the campus are separated from the campus by sufficient distance and with intervening roadways such that the construction noise levels identified in Table 4.10-7 would be reduced by at least 6 dBA. Therefore, in these situations, construction noise levels would be less than 77 dBA L_{eq} at these nearest residential uses. Further, existing daytime noise levels would not increase by more than 10 dBA, and in these instances, construction noise would not result in substantial temporary periodic increases in ambient noise levels at off-campus residential locations.

Off-campus residential uses that are located less than 100 hundred feet from UCR construction sites—such as the homes located near the parking structure proposed for Lot 13—could experience ambient noise levels that are increased by 10 dBA or more. Furthermore, construction work could include infrastructure improvements and utility connections in roadways around the campus. Such infrastructure and/or utility work may need to be scheduled outside of the typical hours of construction in order to avoid traffic impacts from temporary road, lane, or intersection closures. However, as required by PP 4.10-8, UCR conducts meetings, as needed, with off campus constituents that are affected by campus construction in order to provide advance notification of construction activities and ensure that the mutual needs of the particular construction project and those impacted by construction noise are met, to the maximum 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 minimize construction noise impacts to off-campus locations. They would not, however, ensure that noise levels do not increase by less than 10 dBA at noise sensitive uses located in close proximity to construction sites. The 2005 LRDP would therefore result in a substantial periodic increase in ambient noise levels in the project vicinity. This impact would be ***significant and unavoidable***. No mitigation measures have been identified.

Impact 4.10-9 **Implementation of the 2005 LRDP could result in temporary or periodic increases in ambient noise levels due to special events, although special events would occur as under existing conditions. This impact would be *less than significant*.**

Under the 2005 LRDP, noise would continue to be generated by occasional special events at the UCR campus, 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 are no different than those that occur under the existing baseline conditions. Implementation of the 2005 LRDP would increase the number of students living at the campus and, therefore, could increase the number of these events. However, 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 on 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, although events could occur on more days per year. 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, and no mitigation is required.

4.10.5 Cumulative Impacts

For the purposes of this analysis, development of the related projects provided in Table 4-1 (Off-Campus Related Projects) in Section 4.0 (Introduction to the Environmental Analysis) will be considered to contribute to cumulative noise impacts. Noise by definition is a localized phenomenon, and drastically reduces in magnitude as distance from the source increases. Consequently, only projects and growth due to occur in the immediate vicinity of sensitive receptors on or off campus would be likely to contribute to cumulative noise impacts.

Related projects are not expected to result in the exposure of persons to noise levels in excess of applicable standards. Related projects would be subject to the California Noise Insulation Standards, which require that new hotels, dormitories, apartment houses, and dwellings other than detached single-family dwellings achieve interior noise levels of 45 dBA CNEL. Future development is expected to comply with this requirement. Thus, the impact is not cumulatively considerable. Additionally, the 2005 LRDP would be less than significant, as all residential construction under the 2005 LRDP would be designed to be in compliance with this standard. The project would not have a cumulatively considerable contribution to this impact.

With regard to cumulative construction impacts on the immediate vicinity of the campus, Table 4.10-8 lists the groundborne vibration velocity levels of various types of construction equipment. Not included in the Table are figures for more intensive activities that are not contemplated for the 2005 LRDP but may occur in connection with off-campus development, such as pile-driving and the use of explosives, which may be assumed to be significant sources of groundborne vibration. The localized nature of vibration impacts and the fact that all construction would not occur at the same time and at the same location would minimize cumulative effects, and cumulatively considerable impacts would be unlikely. Because the nature and extent of construction in connection with future nearby projects is uncertain, it is assumed for the purposes of this analysis that future development would not result in a considerable cumulative impact. The 2005 LRDP would nevertheless not result in a cumulatively considerable impact with regard to excessive groundborne vibration. Construction activities under the LRDP are unlikely to utilize explosives or pile driving, which are the most intensive ground-shaking activities associated with construction. Additionally, groundborne vibration would remain well below the 80 VdB standard established by the Federal Railway Administration for impacts on residences. Since vibration decreases substantially with distance, groundborne vibration caused by the 2005 LRDP construction will not contribute to any cumulatively excessive groundborne vibration. Therefore, the implementation of the 2005 LRDP would not result in a cumulatively considerable contribution with respect to groundborne vibration from construction.

With regard to cumulative groundborne vibration due to operations, it is not expected that growth in the immediate vicinity of the campus would lead to a cumulatively considerable impact. The immediate vicinity of the campus area is a mixture of residential, retail, and commercial land uses. These land uses

will not result in excessive groundborne vibration, and consequently a cumulatively considerable impact in this area would not occur. Because background operational vibration levels under the 2005 LRDP are expected to be about 50 VdB, which is well below the sensitivity threshold for even sensitive scientific equipment, the 2005 LRDP contribution would not be cumulatively considerable.

Related projects in the immediate vicinity of the campus could result in a cumulative impact in terms of a substantial permanent increase in ambient noise levels. A substantial permanent increase is most likely to originate from increases in noise levels due to roadway traffic. For the purposes of this EIR, an increase of 5 dBA at any location is considered to be a significant impact, and if the resulting noise level would exceed 70 dBA CNEL, an increase of 3 dBA is considered significant. In order to determine whether the 2005 LRDP along with related projects would result in a cumulatively considerable impact, the increase between existing conditions and the "Future With Project Traffic Volumes" scenario was determined. The results are presented in Table 4.10-11 (Cumulative Project Roadway Noise Impacts). As shown, related projects would increase local noise levels by a maximum of 4.6 dBA CNEL along Canyon Crest Drive south of Blaine Street. The next greatest increases would be 3.6 dBA CNEL along Blaine Street east of Iowa Avenue, and 3.5 dBA CNEL along Blaine Street east of Canyon Crest Drive. The maximum cumulative increase at any other location would be 2.7 dBA CNEL, which is inaudible/imperceptible to most people. Although roadway noise levels for specific on-campus locations are not identified in Table 4.10-11, the increase in noise levels identified for the roadway segments that border the main campus would be identical to those identified for the selected off-campus analysis locations in this table.

Because the resulting roadway noise levels along Blaine Street east of Iowa Avenue and Canyon Crest Drive would be greater than 70.0 dBA CNEL, and the increase associated with related projects would be greater than 3 dBA, a cumulatively considerable impact would occur along these two roadway segments. The increase in noise levels at all other on- and off-campus locations would increase by less than 5 dBA CNEL, and by less than 3 dBA CNEL where the resulting noise level is 70 dBA CNEL or more. Therefore, impacts along all other study-area roadway segments would not be cumulatively considerable.

With regard to stationary sources, it is also not expected that there would be a cumulatively considerable impact. The major stationary source of noise that will be introduced into the immediate vicinity of the campus, due to the land use restrictions that the City of Riverside has in place, is HVAC equipment associated with new residential, office, and commercial development. This type of equipment generally produces noise levels of around 55 to 73 dBA L_{eq} at a distance of fifty feet. Shielding, required by the City and by CEQA mitigation, reduces these noise levels about 15 dBA, to around 40 to 68 dBA L_{eq}. Since this shielding would be expected to be utilized on new development in the commercial areas of surrounding area, and commercial areas tend to have higher ambient noise levels, it is not expected that these stationary sources would result in a cumulatively considerable increase in permanent ambient noise levels and the project contribution to this impact would not be cumulatively considerable. Because of the rapid decrease in magnitude of noise as distance increases, the stationary sources due to the 2005 LRDP cannot be expected to contribute to the ambient noise levels existing within those commercial districts. Additionally, campus policies provide for the shielding of these sources as well as the provision of landscaping and other buffers in order to reduce noise levels. Consequently, the 2005 LRDP would not

Table 4.10-11 Cumulative Project Roadway Traffic Noise Impacts

Roadway	*Roadway Segment*	*Noise Levels in dBA L_{dn}*					
		Existing Traffic Volumes	*Cumulative Base Traffic*	*Cumulative + Project Traffic*	*Cumulative Increase*	*Project Contribution*	*Significance Threshold*
Iowa Avenue between University Avenue and Martin Luther King Boulevard as a 2-lane Segment							
Chicago Avenue	south of Martin Luther King Boulevard	69.7	70.9	71.1	1.4	0.2	3.0
	south of Linden Street	68.7	70.5	70.8	2.1	0.3	3.0
	south of 3rd Street	68.2	69.8	70.4	2.2	0.6	3.0
Blaine Street	east of Iowa Avenue	67.3	68.4	70.9	3.6	2.5	3.0
	east of Canyon Crest Drive	67.3	68.5	70.8	3.5	2.3	3.0
		67.3	68.5	70.8	3.5	2.3	3.0
Watkins Drive	south of Blaine Street	66.0	67.0	67.6	1.6	0.6	5.0
Iowa Avenue	south of Linden Street	69.9	70.7	71.0	1.1	0.3	3.0
	south of University Avenue	69.9	69.3	69.9	0.0	0.6	5.0
Canyon Crest Drive	south of Blaine Street	61.9	63.0	66.5	4.6	3.5	5.0
Iowa Avenue between University Avenue and Martin Luther King Boulevard as a 4-lane Segment							
Chicago Avenue	south of Martin Luther King Boulevard	69.7	70.9	71.1	1.4	0.2	3.0
	south of Linden Street	68.7	69.9	70.1	1.4	0.2	3.0
	south of 3rd Street	68.2	69.4	69.8	1.6	0.4	3.0
Blaine Street	east of Iowa Avenue	67.3	68.4	70.9	3.6	2.5	3.0
	east of Canyon Crest Drive	67.3	68.5	70.8	3.5	2.3	3.0
		67.3	68.5	70.8	3.5	2.3	3.0
Watkins Drive	south of Blaine Street	66.0	67.0	68.2	2.2	1.2	5.0
Iowa Avenue	south of Linden Street	69.9	71.5	71.9	2.0	0.4	3.0
	south of University Avenue	69.9	71.9	72.6	2.7	0.7	3.0
Canyon Crest Drive	south of Blaine Street	61.9	63.0	66.5	4.6	3.5	5.0

Source: EIP Associates 2003. Calculation data and results are provided in Appendix J.

result in a cumulatively considerable contribution to a substantial permanent increase in ambient noise levels.

Future construction in the immediate vicinity of the campus could result in individual significant impacts in terms of substantial temporary or periodic increases in ambient noise levels. The threshold for this impact with relation to noise impact is whether an increase in 10 dBA or more would occur. Noise impacts are localized in nature and decrease significantly with distance. However, in order to achieve a cumulative increase in noise of 10 dBA, more than one source emitting high levels of noise would need to be in close proximity to the noise receptor location in question. Because the probability of future construction sites being located in close enough proximity to one another to raise ambient noise levels more than 10 dBA is considered to be remote and unlikely, the impact is not cumulatively considerable.

It is expected that cumulative effects of the 2005 LRDP construction in combination with other construction in the area would not be cumulatively considerable. Because of the distance from campus to the nearby uses where temporary or periodic increases in construction noise are expected to be located, and because of the fact that noise levels decrease rapidly with distance, noise levels from 2005 LRDP construction would not be high enough to make a cumulative contribution to ambient levels in the immediate vicinity of the campus. The presence of landscaping and buffers, and the existence of campus policies and practices relating to the management of noise, would further reduce noise levels such that they would not contribute to distant locales where considerable cumulative impacts are located. This is not a cumulatively considerable impact.

With regard to operations, it is not expected that there will be cumulatively substantial temporary or periodic ambient noise levels. From an operations standpoint, the development envisioned in the immediate vicinity of the campus would not be likely to give rise to new outdoor events, nor would it result in periodic industrial operations, as industrial land uses are not allowed in the immediate vicinity of the campus. Impacts would not be cumulatively considerable. The 2005 LRDP contribution to this impact is also not cumulatively considerable, because special events are not expected to result in significant impacts to the noise environment.

4.10.6 References

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4.11 POPULATION AND HOUSING

4.11.1 Introduction

This section provides baseline data on the existing population and housing characteristics of the City of Riverside, including the project area, and evaluates the potential for the project to induce substantial population growth in an area, either directly or indirectly; displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere; result in substantial housing demand which would exceed available supply; or result in substantial employment growth which would contribute to substantial increase in population and housing demand. The discussion of employment is presented in order to analyze how potential employment increases would affect population growth.

The data used in this section were obtained from various sources, including the U.S. Census (2000), the Southern California Association of Governments (SCAG), the California Department of Finance, the UCR 1990 LRDP, UCR 2003 Strategic Plan for Housing, the California Employment Development Department, Labor Market Division, and the City of Riverside General Plan 2000–05 Housing Element. Bibliographic entries for reference materials appear in Section 4.11.6 (References) of this section.

Five comment letters related to population, housing, and employment were received on the Notice of Preparation circulated for the project. Comment letters requested that the EIR address provision of off-campus housing to accommodate campus growth, particularly multi-unit housing, in addition to addressing the potential location for off-campus housing, and the consistency of LRDP housing policies and population projections with applicable SCAG policies and projections. This analysis is included in Section 4.9, Land Use, which includes a detailed discussion of LRDP consistency with each SCAG policy identified in its scoping letter. Other commenters requested that the EIR address effects of growth on housing economics and quality of life in suburban neighborhoods near campus, provision of more student housing to the west of campus so that students may be in close proximity to University Avenue businesses, and UCR's potential use of redevelopment to address student housing needs. The Notice of Preparation, comment letters on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.11.2 Existing Conditions

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. The Inland Empire is composed of western Riverside and San Bernardino Counties, and is 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. Riverside County, with a projected

population of 2,733,400 by 2020, is expected to experience strong growth over the next 20 years. The influx of new residents will add approximately 1,202,500, or an increase of 79 percent, to the current population.

Table 4.11-1 shows the population growth of the City of Riverside since 1980. During the last 20 years, the City of Riverside has experienced a total population increase of 52.3 percent. The growth trends in Riverside show significant population increases from 1980 to 1990, followed by a somewhat slower rate of growth in the period from 1990 to 2000. During this 20–year period, the population of Riverside increased from 170,591 to 259,738 persons. In 2000, the City's estimated population of 259,738 represented 17.1 percent of Riverside County's total population. The population of the City of Riverside is comprised primarily of families (72 percent), with the largest percentage increase being in single parents with children and unrelated households. These demographic trends are likely to continue through the next decade (General Plan Housing Element 2001).

Table 4.11-1 Population Growth: City of Riverside (1980–2015)

Year	*Population*	*Decade Increase (percent)*	*Average Annual Growth (persons per year)*	*Average Annual Growth Rate (percent)*
1980	170,591	—	—	—
1990	226,505	32.8	5,591	3.3
2000	259,738	14.7	3,323	1.5
2010[a]	304,052	17.1	4,431	1.7
2015[a]	315,398	N/A	2,269	0.7

Source: U.S. Census 2000; California Department of Finance 2000; SCAG 2001

[a] Estimated by SCAG in 2001 *Regional Transportation Plan*

As also shown in Table 4.11-1, SCAG forecasts predict that population growth in the City from 2000–2010 will decrease compared to the rate experienced during the 1990s. Growth is anticipated to slow even further after 2010, with the average annual growth dropping to about half the growth in the 2000–10 period.

Households

The U.S. Census defines a household as all people who occupy a housing unit. A household differs from a dwelling unit because the number of dwelling units includes vacant dwelling units. It is important to note that not all of the population lives in households; a portion lives in group quarters, such as board and care facilities (or University housing), while others are homeless. In addition, the Department of Finance and the Census Bureau do not include student-occupied housing units; although the students are counted in the population, they are not counted as a distinct household.

Household Size

Small households (1 to 2 persons per household) traditionally reside in units with 0 to 2 bedrooms, while family households (3 to 4 persons per household) normally reside in units with 3 to 4 bedrooms. Large households (5 or more persons per household) reside in units with 4 or more bedrooms. However, the

number of units in relation to the household size may also reflect preference and economics. Thus, many small households prefer and obtain larger units. Conversely, some large families live in small units for economic reasons.

The average household size in the City of Riverside and Riverside County has increased since 1990. Table 4.11-2 shows that in 1990, the City of Riverside had 75,463 households, with an average household size of 3.0 persons per housing unit (pph). By 2000, the number of households increased to 79,396, an increase of 5.2 percent, with an increased average household size of 3.12 pph. Average household size is greater in the City of Riverside than in other areas of Riverside County, where the average household size is 2.98 pph. Average household size is greater in the City and in Riverside County than the State of California average, which is 2.77 pph (California Department of Finance 2000).

Table 4.11-2 Households [a] in City of Riverside and Riverside County (1990–2000)

Area	Total Households		Increase 1990–2000	Average Household Size	
	1990	2000		1990	2000
City of Riverside	75,463	79,396	3,933	3.00	3.12
Riverside County	402,067	506,218	104,151	2.85	2.98

Source: U.S. Census, 1990 and 2000

[a] Represents occupied house units.

UCR Population

Campus Population

Student enrollment at UCR is discussed in the LRDP in terms of headcount using the three-quarter average, because student enrollment fluctuates throughout the year. The three quarters are fall, winter, and spring, and the three-quarter average* is the standard measurement of student enrollment. While the campus operates 365 days a year, the academic calendar consists of the *regular session* (fall, winter, and spring quarters, which are used to calculate the *three-quarter average*) and *summer session* (twelve 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 and medicine). The existing total student headcount enrollment for the regular session using a three-quarter average (for the 2001/02 academic year) is 12,703 students.

The *on-campus population*, or the number of individuals either enrolled or employed (headcount) on-campus, consists of students, academic employees, and staff employees. Students comprise the largest headcount 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.

The existing on-campus population is shown in Table 4.11-3.

Table 4.11-3 Existing Campus Population

Type	*2001–02 Baseline*
Regular Session Headcount	
Students [a]	12,703
Faculty and Academic Staff [b]	865
Non-Academic Staff [c]	2,877
Other Individuals [d]	1,196
Total	***17,641***

Source: 2005 Long Range Development Plan; UCR Capital and Physical Planning, May 2003

[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, KUCR & Highlander non-student staff, vendors, and construction workers. Does not include evening or weekend extension students or evening or weekend visitors

* Student population is counted in two ways: by actual headcount and by full time equivalent (FTE). While budgets are calculated in terms of FTE for the purpose of environmental analysis, actual headcount is the better measurement, since FTE tends to under-represent peak impacts. For example, two students taking six units are each likely to have a greater impact than one student 12 twelve units. UCR, however, uses one FTE to equal one headcount, since students for the most part take a full schedule in order to graduate in four years. UCR uses a conversion factor of 0.95 FTE = 1.0 headcount and for long term projections has rounded up to one FTE = one headcount.

Campus-Affiliated Population

In addition to enrolled students and faculty and staff that are employed at UCR, members of the households of UCR students, faculty, and staff comprise the "campus-affiliated" population. Although no data exists for estimating the number of students, faculty and staff that have a spouse, significant other, or dependents, average household size in the City, County, and the State can be used to estimate the number of these persons who have a direct or indirect affiliation with UCR.

Table 4.11-4 shows the location of student and faculty/staff residences, based upon enrollment and parking information.

Table 4.11-4 2001/2002 UCR Population Distribution

	Students[a]		*Faculty & Staff*	
Area	*Percent*	*Number*	*Percent*	*Number*
UCR campus	32.64%	4,147	0.0%	0
City of Riverside (exclusive of campus)	29.36%	3,729	50.0%	1,871
County of Riverside (exclusive of City)	18.0%	2,286	11.0%	412
Outside of Riverside County	20.0%	2,541	39.0%	1,459
Total	***100.0%***	**12,703**	***100.0%***	***3,742***

Source: UCR Transportation and Parking Services 2002; UCR Institutional Planning and Analysis 2003

[a] Three-quarter average headcount, including students studying abroad.

The average household size varies in the region as previously discussed, from 3.12 persons in the City of Riverside, 2.98 persons in the County of Riverside, and 2.77 persons on average in the State of California. However, for the purpose of a conservative analysis, the average household size in the city 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 not available, except for those that reside within the Family Student Housing complex on campus. Table 4.11-5 provides an estimate of the current campus-affiliated population.

Table 4.11-5 2001/2002 Campus-Affiliated Population

Area	Students	Student Household Members	Faculty & Staff	Faculty & Staff Household Members	Totals
UCR Campus	4,147	568[a]	0	0	4,715
City of Riverside (exclusive of campus)	3,729	N/A	1,871	3,967	9,567
County of Riverside (exclusive of City)	2,286	N/A	412	873	3,571
Outside of Riverside County	2,541	N/A	1,459	3,093	7,093
Subtotals	**12,703**	**568**	***3,742***	***7,933***	***24,946***

Source: UCR Transportation and Parking Services 2002; UCR Institutional Planning and Analysis 2003; City of Riverside 2001; County of Riverside 2002.

Does not include campus visitors and other individuals, or an estimate of off-campus student families.

Based on an average household size of 3.12 persons.

[a] Based on the number of Family Student Housing units

Growth Trends

The housing market is driven by supply and demand, influenced by population growth, income, housing cost, housing locations, and housing preferences, which vary amongst certain age groups. The majority of the young adult population (20 to 34 years old) tends to occupy apartments, low- to moderate-cost condominiums, and smaller single-family units. The 35- to 65-year-old group provides the market for moderate- to high-cost apartments and condominiums and larger single-family units because, on average, people of this age group have higher incomes and larger household sizes. For the elderly population (65 years of age and up), housing demands are similar to young adults, but also include group quarters and mobile homes as housing options. Table 4.11-6 provides age distribution in the City of Riverside in 2000.

Table 4.11-6 City of Riverside Age Distribution (2000)

Age Group	Number	Percent of Population
Preschool (0 to 4)	20,435	8.0
Elementary School (5 to 9)	22,559	8.8
Middle School (10 to 14)	21,379	8.4
High School (15 to 19)	23,145	9.1
Young Adults (20 to 24)	22,216	8.7
Prime Working (25 to 54)	106,029	41.5
Retirement (55 to 64)	16,349	6.4
Seniors (65+)	23,054	9.0
Total	**255,166**	**99.9**[a]

Source: U.S. Census 2000

[a] Total does not equal 100 percent due to rounding.

Type of Housing Stock

Data from the U.S. Census Bureau indicate that the housing stock in the City of Riverside increased from 80,371 total housing units in 1990 to 85,974 housing units in 2000, as shown in Table 4.11-7 below. The City of Riverside projects an increase to 97,907 total housing units by 2015 based on SCAG 2000 estimates. This increase represents a growth of 13.9 percent over the 2000 total of 85,974 units.

Table 4.11-7 Housing Stock in the City of Riverside

Year	*Number of Units*	*Percent Increase*
1990	80,240	—
2000	85,974	7.1 percent

Source: U.S. Census, 2000

A substantial portion of future residential developments in the City of Riverside is most likely to occur in the Riverside Central Industrial Redevelopment Project area, as noted by the City of Riverside's Development Department. The Redevelopment Project area is designed to enhance the visual and economic quality of the University Avenue Corridor. A balance of visitor/UCR-serving commercial land uses—surrounded by medium- and high-density residential uses—is designated to revitalize both downtown Riverside and the University Community Plan area.

As shown by 2000 census data, 56.6 percent of the housing stock in the City of Riverside was owner-occupied, while 43.4 percent of the housing stock was renter-occupied. The 2000 breakdown for housing by type is (derived from Table 4.11-8)

- 66.9 percent single family
- 6.1 percent multi family (2–4 units)
- 24.5 percent multi family (5+ units)
- 2.5 percent mobile homes/other

Table 4.11-8 City of Riverside Total Housing Units, 1990 to 2000 (defined by units per structure)

Year	*Single Family* [a]	*Two to Four Units*	*Five or More Units*	*Mobile Homes/Other*	*Total Number of Units*	*Occupied Units*
1990	53,688	5,267	19,204	2,102	80,261	75,482
2000	57,889	5,287	21,166	2,127	86,469	81,322

Source: US Census 2000, California Department of Finance, 2000

[a] Includes single family detached and attached units.

Vacancy Rate

The vacancy rates and affordability of the housing stock are also 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.

Vacancy rates, which indicate a "market balance" (a condition where rates indicate a reasonable level of vacancy), generally range from 1 to 3 percent for single-family units, and from 3 to 5 percent for multi-family units. Improvements in the Inland Empire economy continue to affect the housing market, resulting in declining vacancy rates for apartments. In 2000, the City's vacancy rate was 1.9 percent for owner-occupied units and 4.8 percent for renter-occupied units, indicating market balance conditions. Table 4.11-9 provides the vacancy data in the City in 1990 and 2000.

Table 4.11-9 Vacancy Rate, City of Riverside, 1990 to 2000

Year	*Vacant Units*	*Total Vacancy Rate (percent)*
1990	4,777	5.95
2000	3,969	4.6

Source: U.S. Census 2000, California Department of Finance, 2000

It should be noted that the total vacancy rates include vacant units that are not available for rent or sale. This includes units 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. In reality, these units should not be included in the vacancy rate because they are not on the market, and are not available for rental or purchase. In addition, the vacant rental units should include both assisted and unassisted living units, as well as units available only to senior citizens.

Housing Cost

Although an assessment of "housing needs" includes such components as total unit numbers and types, age, and vacancy rates, the cost of housing is a significant issue to many households. Housing prices in the City of Riverside peaked in prices during 1989/90, then declined in the early 1990's and rebounded in the late 1990s. According to the US Census Bureau, the median cost of housing in the City of Riverside increased from $134,800 in 1990 to $144,300 in 2000. In 2000, apartment rents in the City ranged from a median of $530 for a one-bedroom unit to $825 for a three-bedroom unit.

State law requires jurisdictions to provide for their share of regional housing needs. As part of the Regional Housing Needs Assessment (RHNA), SCAG estimates five-year housing needs for cities within its region. The most recent data for the City estimate the percentage of housing units required to be affordable, or for incremental income groups, during the 1998–2005 period, as shown in Table 4.11-10.

Table 4.11-10 Fair Share Housing Needs Allocation, City of Riverside, 1998 to 2005

Income	*Unit Needs*	*Percent of Housing Needs*
Very Low	1,663	21.5
Low	1,186	15.4
Moderate	1,675	21.7
Above Moderate	3,198	41.4
Total	***7,722***	***100.0***

Source: SCAG 2000

UCR Housing

Existing On-Campus Housing Supply

Table 4.11-11 shows existing on-campus housing by name, type of facility and the number of students housed.

Table 4.11-11 UCR-Owned Housing and Private Housing on UCR Land, 2000/01

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	346
Canyon Crest	Family Student Apartments	268
International Village [b]	Apartments	65
Lothian	Multi-Story Residence Hall	996
Pentland Hills [a]	Multi-Story Residence Hall	1,132
Stonehaven [b]	Apartments	400
University Plaza	Apartments	148
Total Students Housed		***4,147***

Source: UCR Institutional Planning and Analysis 2001

[a] The Pentland Hills Residence Halls were occupied in 2001 and 2002, but are included herein for an accurate total

[b] The International Village and Stonehaven apartments were privately developed on UCR property, and are intended to only house UCR or UCR Extension students.

Existing UCR Housing Demand

Current housing demand for the UCR campus is summarized in Table 4.11-12. Approximately 4,147 students are housed on campus and 8,556 resided off campus, along with 3,742 academic and other staff (who all reside off-campus).

Table 4.11-12 UCR Housing Demand

Housing Type	*2000/01 Academic Year*
Students	
On-campus	4,147
Off-campus (City of Riverside and Surrounding Region)	8,556
Subtotal	*12,703*
Employees	
Faculty and Academic Staff	865
Non-Academic Staff	2,877
Subtotal	*3,742*
Total Housing Demand	***16,445***

Source: UCR Institutional Planning and Analysis 2001

Based on Table 4.11-4, it is assumed that approximately 98 percent of UCR faculty and staff reside in the City of Riverside and Riverside and San Bernardino Counties. Off-campus distribution of the student population can be assumed to be similar to the faculty and staff, in that the majority of students reside in Riverside and San Bernardino Counties. However, for purposes of this analysis, it is assumed that a larger percentage of students reside in Riverside County than indicated for faculty and other staff, due to the availability and affordability of multi-family units in the City of Riverside and remainder of the County, and based on the findings of the University Community Plan adopted by the City (discussed later in this section).

Employment

Regional Trends

As of June 2003, the total labor force in the County of Riverside was estimated at 816,600 persons. Of this total, 766,900 were employed and 49,700 were unemployed, for a 6.1 percent unemployment rate. From 1995 to 1999, Riverside County's labor force increased by 12.4 percent, compared to 7.6 percent for the State. The sustained labor force gains enjoyed by Riverside County are also evident in neighboring San Bernardino County, with a 10.8 percent change over this period. Within the City of Riverside, the labor force totaled 155,433 persons in 2000.

The service sector is the largest employer in Riverside County, accounting for 27.5 percent of total employment, with health services being the largest component. Other significant industry sectors providing employment are retail trade (20.3 percent) and government (17.9 percent). The service sector is also the fastest-growing industry, with a seven-year projected growth rate of 34.5 percent (1995–2002). Rapid growth in this area is due in part to the increasing demand in the health services sector. It is expected that during this forecast period, 73.3 percent of the job growth in the County will continue to be in services, government, and retail trade. Riverside County will continue to show steady industry employment growth along with a steady increase in population (State of California, EDD, 2001). Table 4.11-13 depicts employment data in selected sectors.

UCR is included in the EDD's list of the major employers in Riverside County, as listed in Table 4.11-14. As discussed in the Introduction to this section, the discussion of employment is presented in the context of how changes to employment numbers at UCR could affect population in the area.

Table 4.11-13 Employment—Selected Sectors, Riverside/San Bernardino Metropolitan Statistical Area

Sector	*Industry*	*1999*	*2000*	*Change (percent)*
1	Wholesale/Retail Trade	233,700	246,800	5.60
2	Services	251,500	266,800	6.10
3	Finance	31,900	31,700	-0.01
4	Goods-Producing	189,600	203,600	7.40
5	Farming	21,300	20,900	-0.02
6	Government	183,100	191,600	4.60
Total	***All Industries***	***911,100***	***961,400***	***5.52***

Source: California Employment Development Department, Labor Market Information, 2000.

Table 4.11-14 Major Employers—County of Riverside 2000

Employer Name	*Location*	*Industry*
Desert Regional Medical Center	Palm Springs	Hospitals
Eisenhower Medical Center	Rancho Mirage	Offices and Clinics of Medical Doctors
Fleetwood Enterprises, Inc.	Riverside	Wood Buildings and Mobile Homes
Granite Construction Company	Indio	Highway and Street Construction
Hemet Valley Medical Center	Hemet	Hospitals
KSL Recreation Group, Inc.	La Quinta	Hotels and Motels
Marriott Hotels and Resorts	Palm Desert	Hotels and Motels
National RV Holdings, Inc.	Perris	Motor Vehicles and Equipment
Parkview Community Hospital	Riverside	Hospitals
Pechanga Development	Temecula	Misc. Amusement, Recreation Services
Press Enterprise	Riverside	Newspapers
Riverside Community College	Riverside	Colleges and Universities
Riverside Community Hospital	Riverside	Hospitals
Riverside General Hospital	Moreno Valley	Hospitals
University of California	Riverside	Colleges and Universities

Source: California Employment Development Department, Labor Market Information, 2000.

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 4.11-15 for the City of Riverside and Riverside County. The projected growth in campus population by 2015 is within in the SCAG projections through growth rate assumptions, since the LRDP would serve future growth in the region (personal communication Jihong McDermott, SCAG).

Table 4.11-15 SCAG Population, Housing, and Employment Estimates

	2005	2010	2015	2020	2025
City of Riverside					
Population	292,404	302,781	312,957	326,738	340,575
Housing	88,377	93,248	97,907	103,636	109,800
Employment	154,003	182,943	200,058	215,701	232,326
Riverside County					
Population	1,813,573	2,031,101	2,244,778	2,530,545	2,831,517
Housing	570,331	652,983	732,130	829,323	933,874
Employment	642,119	776,718	856,314	929,080	1,006,419

Source: SCAG 2000

4.11.3 Regulatory Framework

Federal

There are no federal population and housing regulations applicable to the 2005 LRDP.

State

There are no State population and housing regulations applicable to the 2005 LRDP.

Local

City of Riverside General Plan Housing Element

Goals and associated policies and programs have been developed by the City to address the City's housing needs. The goals identified in the City's General Plan applicable to the proposed project are centered on improving substandard housing, maintaining, preserving, and revitalizing residential neighborhoods, supporting quality housing for all economic groups within the community, promoting the preservation of historic homes and other structures, promoting and encouraging the development of a variety of housing opportunities to accommodate current and projected housing needs, the availability of affordable housing, equal housing opportunities, and promoting consistency with County and Regional Plans.

According to the Riverside General Plan Housing Element and pursuant to State law, the City of Riverside supports the provision of sites for special needs housing, such as college students. The Riverside Zoning Code permits dormitories as well as other standard housing opportunities in multi-family residential zones. In addition, these provisions further Riverside's commitment to fair and equal housing opportunities.

The Housing Element for the City of Riverside General Plan discusses the continued demand for housing resulting from UCR growth. Housing Element policies provide for the stimulation of construction and expansion of multi-family housing throughout the area serving UCR. Included in these policies are provisions for coordination between the City and UCR to identify potential increases in demand through joint studies, through zoning of additional housing areas by the City and, potentially, through City incentives for development of additional housing near UCR. Although UC is not subject to local land use policies, the campus voluntarily considers consistency with the City's General Plan.

University Community Plan

In addition to the General Plan, the City of Riverside has prepared a University Community Plan for the approximately 3,500-acre area around (and including) the UCR campus, which recognizes the needs of UCR, which are unique to a university community, and articulates planning policies and programs to address these needs.

In addition to discussing solutions to a potential rental apartment supply issue, the Plan describes the City's Mortgage Revenue Bond (MRB) program, intended to encourage the development of affordable multiple-family rental housing throughout Riverside. The Plan acknowledges that future UCR housing availability will be determined by UCR housing goals and objectives and by UCR housing strategies, including the construction and purchase of additional facilities and joint development of projects with the private sector.

4.11.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps 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 2005 LRDP to induce substantial population growth, displace people or existing housing, result in substantial housing demand, existing population levels on-campus, in the City, and in the region were compared to population levels. Existing growth projections were reviewed, based on information included in the environmental setting, to determine whether substantial changes in population and housing demand would occur.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on population and housing if it would result in any of the following:

- 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

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to be Significant related to population and housing; therefore, all potential population and housing impacts are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project 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)?

Impact 4.11-1 **Implementation of the 2005 LRDP would directly induce substantial population growth in the area by proposing increased enrollment and additional employment, although this increase would not result in population or housing effects that would lead to a significant impact on the environment. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would accommodate an increase in student enrollment and result in a corresponding increase in on-campus employment and the campus population. The increase in campus population could induce substantial population growth within the City of Riverside.

During the planning horizon of the 2005 LRDP, future development would be guided by LRDP Planning Strategies (PS), including the following strategy relevant to housing.

PS Land Use 4 *Pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing.*

Implementation of the 2005 LRDP would increase student enrollment by approximately 12,297 students, increase faculty and staff employed on campus by approximately 4,174, and increase other individuals (including campus visitors) by approximately 1,428 as shown in Table 4.11-16. This would increase the campus population by approximately 17,899 persons.

In addition to persons enrolled or employed at UCR, other persons would reside in the Riverside area as a result of implementation of the 2005 LRDP, including members of student families that reside on campus, and household members of new faculty and staff. Using the conservative assumption that all new faculty and staff are members of an individual household unit, and the City of Riverside average household size of 3.12 persons, the increase in population associated with the 2005 LRDP is determined to be 17,899, as shown in Table 4.11-16, above. This includes persons enrolled or employed at UCR, household members of families living on campus, and household member of faculty and staff residing off campus. Population projections are based on the existing distribution of students, faculty, and staff, shown in Table 4.11-4, as the distribution of students and staff residences is assumed to remain similar to

the present. The increase in population can therefore be divided into increased population in the City of Riverside, in the County of Riverside, and outside the County of Riverside. In addition, population increases would be affected by increases in students, faculty, and staff.

Table 4.11-16 Current and Future Campus Population

	2000/01 Baseline	*2015-16 Projection*	*Net Increase*
Students [a]	12,703	25,000	12,297
Faculty and Academic Staff [b]	865	1,726	861
Non-Academic Staff [c]	2,877	6,190	3,313
Other Individuals [d]	1,196	2,624	1,428
Total	***17,641***	***35,540***	***17,899***

Source: 2005 Long Range Development Plan
UCR Capital and Physical Planning, May, 2003

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 & Highlander non-student staff, vendors and construction workers. Also includes approximately 568 current and 1,514 future student family members (residing in on-campus housing). Does not include evening or weekend extension students or evening or weekend visitors.

A total of 50 percent of students would be housed on campus, consistent with Planning Strategy *Land Use 4*. Using the baseline number, UCR houses approximately 32.64 percent of the total student population; about 67 percent of the total student population resides off-campus, which includes 29 percent of the total student population in the City of Riverside. It is estimated that a total of about 7,876 students (62 percent) currently live in the City of Riverside, including those residing on- and off-campus. This analysis assumes that the percentage of students living in the City would remain the same under the 2005 LRDP. With on-campus housing provided for 50 percent of the student population under the 2005 LRDP, 12,500 students would reside on campus, and the remaining 50 percent would reside off-campus. UCR's ability to provide this amount of housing is dependent on being able to offer housing that is cost-competitive with private housing. However, the increase in on-campus housing would absorb the increased population growth in the City. At 2005 LRDP buildout, a total of 15,500 students would live in the City (62 percent of 25,000 students), and with 12,500 housed on campus, 3,000 students would require off-campus housing. There are approximately 3,749 students that are currently living off campus. Consequently, the number of students living off-campus and in the City of Riverside would remain constant or decrease somewhat. In addition, this analysis does not take into account students living at home and commuting to the campus. A total of 20 percent of all UCR students in that year had a "home location" in the County of Riverside, which would decrease the number of students needing housing in the City even further. It is possible that the provision for on-campus housing under the 2005 LRDP would result in more students living on-campus, while the number of students living off-campus remains the same or increases, as students currently commuting from the County of Riverside or elsewhere elect to relocate closer to the campus. However, without any evidence to support this potential occurrence, this analysis assumes that the relative distribution of students would remain the same.

Students residing in the County of Riverside would include 18 percent of the total student population, and the remaining 20 percent of students reside outside of Riverside County. Approximately 50 percent of faculty and staff reside in the City of Riverside, 11 percent in the County, and the remaining 39 percent outside of the Riverside County. Table 4.11-17 provides information on the future campus-affiliated population, by location. For a conservative estimate, it is assumed that the total number of students residing in the City of Riverside would remain the same, rather than decrease, and that fewer students would reside outside of Riverside County.

Table 4.11-17 Future Campus-Affiliated Population, by Location

Location	*Students*	*Student Household Members*	*Faculty & Staff*	*Faculty & Staff Household Members*	*Area Totals*
UCR campus	12,500	1,514[a]	0	0	14,014
City of Riverside (exclusive of campus)[b]	3,749	N/A	3,958	8,391	16,098
County of Riverside (exclusive of City)	4,500	N/A	871	1,847	7,218
Outside of Riverside County	4,251	N/A	3,087	6,544	13,882
Totals	***25,000***	***1,514***	***7,916***	***16,782***	***51,212***

Source: EIP Associates 2003

Does not include campus visitors and other individuals, or an estimate of off-campus student families.

Households are based on an average of 3.12 persons.

[a] Based on the number of Family Student Housing units.

[b] Number of students living off-campus in City of Riverside assumed to be same as current.

By comparing the total current campus-affiliated population to the estimated future campus-affiliated population, the increase that would result from implementation of the 2005 LRDP can be estimated within the City of Riverside, the County of Riverside, and outside the County of Riverside, as shown in Table 4.11-18.

Table 4.11-18 Increase in Campus-Affiliated Population, by Location

Location	*Current*[a]	*Future*[b]	*Change*
UCR campus	4,715[c]	14,014[c]	9,299
City of Riverside (exclusive of campus)[d]	9,567	16,098	6,531
County of Riverside (exclusive of City)	3,571	7,218	3,647
Outside of Riverside County	7,093	13,882	6,789
Subtotals	***24,946***	***51,212***	***26,266***

Source: EIP Associates 2003

[a] See Table 4.11-5

[b] See Table 4.11-17

c Includes dependents in family housing.

[d] Number of students living off-campus in City of Riverside assumed to be same as current.

Implementation of the 2005 LRDP would result in an increase in the campus-affiliated population of approximately 9,299 on campus and 6,531 in the City of Riverside, off-campus, for a total of 15,830

persons in the City of Riverside; approximately 3,647 persons in the County of Riverside; and approximately 6,789 persons in areas outside the County of Riverside.

Table 4.11-19 compares the increase in students, faculty, staff, and their associated family members to growth projections for the region in the Growth Management Chapter of the SCAG Regional Comprehensive Plan and Guide.

Table 4.11-19 Campus-Affiliated Population Growth Compared to Regional Population Projections

Location	*2000 Population*	*2015 Population*	*Projected Net Increase*	*Campus-Affiliated Increase,*	*Campus-Affiliated Percent of Growth*
City of Riverside (inclusive of campus)	259,738	312,957	53,219	15,830	29.7%
County of Riverside (exclusive of City)	1,508,530	2,244,778	736,248	3,647	0.5%
Counties of Los Angeles, Orange and San Bernardino	15,473,417	17,711,313	2,237,896	6,789	0.3%

Sources: SCAG, 2000 RTP Growth Forecasts; EIP Associates, 2003

Population growth outside the County of Riverside is assumed to occur within Los Angeles, Orange, and San Bernardino Counties.

The comparison of growth in Table 4.11-19 shows that the campus-affiliated population (resulting from implementation of the 2005 LRDP) to regional projections shows that LRDP-related growth would comprise approximately 30 percent of projected growth in the City during the planning horizon of the 2005 LRDP. LRDP-related growth in Riverside County and the adjacent three-county area would be relatively minor in comparison to projected growth. The City of Riverside is currently updating its General Plan, and these updates will be incorporated into SCAG projections. Further, the City is aware of potential enrollment increases at UCR and is working with UCR to plan for this growth. However, the rate of growth may be impacted by budget constraints but, as a long-term plan, must still plan to accommodate projected future enrollment and related population growth. While implementation of the 2005 LRDP 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.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not induce substantial population growth within the City of Riverside, either directly or indirectly, and this impact would be ***less than significant***.

Threshold	Would the project create a demand for housing that could not be accommodated by the local jurisdiction?

Impact 4.11-2 **Implementation of the 2005 LRDP would result in an increased demand for housing. With implementation of the relevant 2005**

LRDP Planning Strategies, this impact would be *less than significant*.

Implementation of the 2005 LRDP would accommodate an increase in student enrollment and result in a corresponding increase in on-campus employment and the campus population. The increase in the campus population could result in an increased demand for housing in the City of Riverside and the surrounding area.

With implementation of LRDP Planning Strategy *Land Use 4*, described above under Impact 4.11-1, 50 percent of the student enrollment would be housed in campus-controlled housing.

As described in Table 4.11-16, implementation of the proposed 2005 LRDP would increase enrollment by 12,297 students, and increase on-campus employment by 4,174 faculty and staff. As shown in Table 4.11-18, this increase in the campus population would result in an increase in the campus-affiliated population (including household members of on-campus student families, and faculty/staff household members) of approximately 26,266 persons. Table 4.11-20 provides an estimate of how this increase in campus-affiliated population would increase housing demand, and how that demand relates 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. As discussed under Impact 4.11-1, the increase in students in the city, not housed on campus, would not be substantial. Consequently, the primary increase in housing demand in the City would be due to faculty and staff.

Table 4.11-20 Increase in Campus-Affiliated Housing Demand, by Location

Location	*LRDP-Related Increase (Population)*[c]	*Housing Demand, in Units*	*Projected Increase in Units*	*LRDP Percent of Projected Housing Growth*
UCR Campus [a]	9,299	5,062	5,062	100.0%
City of Riverside (exclusive of campus)[b]	6,531	2,093	11,438	18.3%
County of Riverside (exclusive of City)	3,647	1,169	161,799	0.7%
Counties of Los Angeles, Orange, and San Bernardino	6,789	2,176	791,526	0.3%
Subtotals	***26,266***	***10,500***	***969,825***	

Source: EIP Associates 2003

Does not include campus visitors and other individuals, or an estimate of off-campus student families.

Households based on an average of 3.12 persons

[a] Based on the UCR Strategic Housing Plan and the number of current and projected beds, converted to units based on 2 beds per residence hall room, 3.7 beds per apartment unit and one student bed per Family Student Housing unit.

[b] Number of students living off-campus in City of Riverside assumed to be same as current.

[c] Population increases calculated as part of Table 4.11-18.

As shown in Table 4.11-20, implementation of the 2005 LRDP would result in a demand for approximately 10,500 units of housing (including on-campus student housing), for which demand for approximately 2,093 units would occur within the City of Riverside, approximately 18 percent of projected growth during the LRDP planning horizon. LRDP-related growth in housing demand in the County of Riverside and the adjacent three-county area of Los Angeles, Orange, and San Bernardino Counties would be relatively minor (less than 1 percent).

UCR has prepared a Strategic Plan for Housing to investigate the feasibility of accommodating all of the new housing on campus. To reach the goal of housing 50 percent of student enrollment (a total of 12,500 beds), the campus needs to provide an additional 8,353 beds during the LRDP planning horizon (as 4,147 students are currently housed on-campus). With a project enrollment increase of 12,297 students (from the LRDP baseline to the year 2015/16), the LRDP *Planning Strategy Land Use 4* would not provide housing for all newly enrolled students. Although some number of those students may already reside within the City or County of Riverside (or the adjacent counties), as a conservative assumption, it is assumed that all new students would contribute to housing demand in the region, as shown in Table 4.11-20.

The City of Riverside is aware that growth at UCR is planned (and has been since the previous LRDP). The City is in the midst of updating the General Plan, which may include revisions to the University Community Plan, the University Avenue Specific Plan, and other specific plans in order to promote additional housing at specific locations in the City, including along University Avenue and in downtown Riverside. However, the current City Housing Element identifies that over 10,000 housing units can be accommodated in the City. As implementation of the 2005 LRDP would occur gradually over the planning horizon of the LRDP (to the year 2015/16), rather than as a single event in a given year; the demand for housing would increase gradually during this period. As the projected housing demand within the City of Riverside does not exceed the projected supply, the housing stock within the City can adequately meet housing for UCR students, faculty, and staff.

LRDP-related growth in housing demand in the County of Riverside, or approximately 1,169 units is well within the projected countywide growth of 161,799 units. Similarly, the projected increase in demand of approximately 1,176 units for the adjacent three-county area of Los Angeles, Orange, and San Bernardino Counties is well within the projected increase of 791,526 units. Thus, the regional housing stock can adequately meet the projected housing demand for UCR students, faculty, and staff.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not create a demand for housing that could not be accommodated by local jurisdictions, and this impact would be *less than significant*.

Threshold	Would the project displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Impact 4.11-3 **Implementation of the 2005 LRDP would not displace existing on-campus residents but would create additional demand for housing. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the demolition and redevelopment of 268 units in the existing Canyon Crest Family Student Housing and the construction of 714 units of new family student housing, to replace the housing that would be demolished.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS), including one relevant to displacement of 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.*

Prior to the demolition (and subsequent redevelopment of the Canyon Crest Family Student Housing), the campus would construct replacement housing on the West Campus. Current residents of the Canyon Crest housing would be relocated to the replacement units. Thus, no student families would be displaced as a result of implementation of the 2005 LRDP. It is anticipated that the increase in housing demand associated with implementation of the 2005 LRDP was discussed above under Impact 4.11-2. Additional demand for housing generated by the 2005 LRDP would not result in displacement of housing currently occupied by persons unaffiliated with UCR. As population growth occurs associated with the 2005 LRDP, students, faculty, and staff would occupy new on-campus housing, and vacant or for-sale housing units located off campus.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not result in the displacement of substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere, and this impact would be *less than significant*.

Threshold	Would the project displace substantial numbers of existing people, necessitating the construction of replacement housing elsewhere?

Impact 4.11-4 — **Implementation of the 2005 LRDP would not displace substantial numbers of people that would necessitate the construction of replacement housing elsewhere. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

As described above in Impact 4.11-3, implementation of the 2005 LRDP would involve redevelopment of the existing 268-unit Canyon Crest Family Student Housing complex, which would require the construction of replacement housing. Per LRDP Planning Strategy *Land Use 5,* as discussed above under Impact 4.11-3, 714 new units of family student housing would be constructed. It is anticipated that replacement housing would be constructed prior to demolition of existing units, and those units would be offered to current residents of the Canyon Crest Family Student Housing. Thus, no current residents would be displaced. Additional demand for housing generated by the 2005 LRDP would not result in displacement of housing currently occupied by persons not affiliated with UCR. As population growth occurs associated with the 2005 LRDP, students, faculty, and staff would occupy new on-campus housing, and vacant or for-sale housing units located off campus.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not displace substantial numbers of people, necessitating the construction of replacement housing elsewhere, and this impact would be *less than significant*.

4.11.5 Cumulative Impacts

The geographic context for the analysis of cumulative population and housing impacts is the County of Riverside. The cumulative context within this geographic area includes all growth envisioned by SCAG in the Regional Transportation Plan Growth Forecast and the Regional Comprehensive Plan and Guide; all growth anticipated to occur in the County; and development of the off-campus related projects, as discussed in Section 4.0 (Introduction to the Environmental Analysis).

SCAG regional growth projections would result in 312,957 persons in the City of Riverside and 2.24 million persons in the County of Riverside by 2015, which would result in substantial increases over existing population levels.

Development in the City of Riverside would also increase its population. SCAG anticipated a population growth rate of approximately between 0.7 and 1.7 percent through 2015 in the City, as shown in Table 4.11-1. The City General Plan Housing Element indicates a population of about 325,000 persons by 2015, which exceeds SCAG projections for that year of 312,957. Based on the projections in the Housing Element, it appears that related development in the City in combination with the 2005 LRDP would exceed current SCAG projections. The City of Riverside is currently updating its General Plan, which will incorporate planned growth at UCR, and the update will be incorporated into future SCAG projections. Cumulative development 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 significant population growth itself would not be significant.

The identification of suitable sites for on- and off-campus housing under the 2005 LRDP is consistent with the City of Riverside General Plan Housing Element's goals and associated polices and programs developed to address the City's housing needs. The Housing Element includes policies aimed at stimulating the construction and expansion of multi-family housing throughout the area serving the University, providing for the coordination between the City and UCR in performing joint studies to identify potential increases in housing demand, the zoning of additional housing areas by the City, and the development of additional housing near UCR through City incentives.

As indicated above, SCAG has prepared a Regional Housing Needs Assessment (RHNA), which identifies the anticipated future housing demand within each jurisdiction in the SCAG six-county region through 2005, as well as the proportionate share of new housing units needed in each jurisdiction to satisfy this demand. Pursuant to State law, each jurisdiction is required to plan for the attainment of the share of new housing identified in the RHNA as part of the Housing Element of that jurisdiction's General Plan. The City of Riverside disputes the RHNA numbers assigned to the City, which identifies a need of 7,722 additional units in the 1998 to 2005 planning period. However, the City Housing Element identifies that over 10,000 housing units can be accommodated in the City, and it has adequate resources to address the remaining regional housing needs requirements. Table 4.0-2 (Off-Campus Related Projects) in Section 4.0 (Introduction to the Environmental Analysis) identifies approximately 1,072 dwelling units currently planned for development within the City in the vicinity of the campus. Thus, it appears that

housing demand in the City as identified by the RHNA could be met by future development. As discussed under Impact 4.11-2, while the 2005 LRDP would comprise 18 percent of future housing demand, the projected housing demand from the proposed project within the City of Riverside does not exceed the projected supply, and the housing stock within the City can adequately meet housing for UCR students, faculty, and staff. Further, the increased housing demand created by the project in the larger Riverside County region and surrounding areas would be less than 1 percent of future demands. Therefore, cumulative impacts on housing demand would not be signficant, and the 2005 LRDP would not have a cumulatively considerable contribution to this demand.

Related development could result in demolition of existing housing units, displacing existing persons or dwelling units. Implementation of the 2005 LRDP would result in the demolition and redevelopment of 268 units in the existing Canyon Crest Family Student Housing and the construction of 714 units of new family student housing, to replace the housing that would be demolished. The project would not result in the displacement of persons or housing without providing replacement housing. Therefore, the project would not contribute to any cumulative effects on the displacement of housing or people.

4.11.6 References

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4.12 PUBLIC SERVICES

4.12.1 Introduction

This section of the EIR describes the existing conditions of fire, police, school, and library services that serve the UCR campus and analyzes the potential for implementation of the 2005 LRDP to 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, or other public facilities. Parks, while described as a public service in Appendix G of the CEQA Guidelines, are analyzed separately in Section 4.13 (Recreation). Impacts related to emergency access are analyzed in Section 4.14 (Transportation/Traffic) of this EIR.

The information in this section is based upon consultation with the City of Riverside Fire and Police Departments, UC Police Department, Riverside Unified School District, City of Riverside Library, and information in the UCR 1990 LRDP Final EIR. In addition, information was obtained from the City and County of Riverside General Plans. Bibliographic entries for reference materials appear in Section 4.12.6 (References) of this section.

Three comment letters related to public services were received on the Notice of Preparation circulated for the project. The commenters requested that the EIR address impacts to police services, including impacts to both the UC Police Department and the Riverside Police Department, from population increases related to LRDP implementation, police protection in the community surrounding UCR, and increases in police service demands from off-campus development. This section analyzes such impacts. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.12.2 Existing Conditions

Fire Protection

The City of Riverside Fire Department (RFD) in conjunction with the Environmental Health and Safety Department (EH&S) provides fire service for the UCR campus, based on an unwritten agreement between these departments, which identifies the City of Riverside Fire Department as 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.

City of Riverside

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 13 stations. The UCR campus is served by three stations within approximately 2 miles of the campus, including Station No. 4 at

3510 Cranford Avenue, approximately 0.5 mile from the campus, and station Nos. 6 and 1 at 2293 Main Street and 3420 Mission Inn Avenue, respectively, approximately two miles from the campus. Station Nos. 4 and 6 are each equipped with one engine company and four firefighters, while Station No. 1 is equipped with one engine company, one truck company, one squad, and a total of nine firefighters (including one battalion chief). Station 4 is responsible for providing first-response service to the campus. Emergency response times from all three stations to the campus are less than five minutes. Additional fire service can be provided to the campus from the remaining eleven stations; however, response times from these stations may be greater than ten minutes.

Environmental Health and Safety

Campus EH&S is also responsible for fire protection engineering, fire inspection, and fire prevention. Fire protection engineering, which consists of design consultation services, formal plan review and approval, and various acceptance testing and inspections, is 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.

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 is currently adequate and is inspected and reviewed by EH&S periodically.

UCR 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 five 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 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 are supplemented by the second connection on Linden Street and a booster pumping station drawing water from the City's 5 MG reservoir.

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 and north/south lines in Chicago Avenue, Iowa Avenue, and the Cranford Avenue street alignment.

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 two hours, and is considered adequate to serve the fire suppression needs for the campus (personal communication, Scott Corrin, Campus Fire Marshall, March 2003).

County of Riverside

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 will supply available manpower and equipment when requested and as available.

Police Enforcement

The UC Police Department 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 four positions are currently unfilled in the Department, those positions may be filled. With 25 current sworn officers and an existing campus population of approximately 17,641 (students, faculty, staff and other individuals), the current service ratio is approximately 1.4 sworn officers per 1,000 persons. The Department also has 32 non-sworn personnel, consisting of six full-time Public Safety Dispatchers (PSDs), 22 part-time Community Service Officers (CSOs), one full-time Administrative Specialist, one Programmer Analyst, one Computer Resource Specialist, and one part-time Administrative Assistant.

The UC Police Department relies on requests for service to determine the number of officers on patrol. Typically, UCR uses a minimum of two patrol cars and three officers to patrol the campus 24 hours per day, seven days per week. Additional officers are scheduled during special events, or when deemed necessary. The UC Police Department, as required by State law, has a formal Memorandum of Understanding (MOU) with the City of Riverside, whereby both the UC Police Department and the Riverside Police Department (RPD) provide 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 500-600 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 UC Police Department with emergency back-ups, and infrequently, the handling of emergency calls when UC Police Department staff is unavailable.

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.

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.

Schools

The Riverside Unified School District (RUSD) is responsible for providing public elementary, middle and high school education within the City of Riverside. Elementary school facilities in the immediate area of the campus include Longfellow Elementary, Highland Elementary, Hyatt Elementary, and Emerson Elementary. Student attendance areas for each of these schools have been established to allocate students to facilities based upon location of residence and school capacity. Middle schools serving the UCR area include University Heights Middle School and Gage Middle School. Two of the four high schools in the RUSD serve the UCR area—North High School and Poly High School. Existing enrollment at the schools serving the UCR vicinity is shown in Table 4.12-1. The District is planning to expand capacity by building several new schools, as shown in Table 4.12-2. Several new schools are planned to meet growth expected in the area, and new schools would increase the overall capacity of the RUSD by 3,075 elementary school and 1,200 middle school students. All new schools are not located in the vicinity of UCR. However, by developing new schools, the District has the option to modify the enrollment areas for each school, thereby freeing up capacity in other areas if needed. The RUSD has an assumed generation rate of 0.6 students per dwelling unit.

Table 4.12-1 UCR Area School Capacities and Enrollments

School	*Capacity*	*Year 2001/02 Enrollment*	*At Capacity?*
Longfellow Elementary	774	809 + 20	Yes
Highland Elementary	783	866 + 52	Yes
Hyatt Elementary	456	344 + 0	No
Emerson Elementary	576	502 + 44	No
University Heights Middle School	999	770 + 51	No
Gage Middle School	1,095	1,027 + 48	No
North High School	2,163	2,266 + 92	Yes
Poly High School	2,139	2,160 + 90	Yes

Source: Riverside Unified School District 2002

+ Indicates special education students

Table 4.12-2 Planned RUSD Expansion

School	Location	Year 2001/02 Enrollment	Scheduled Opening Date
Middle School #7	Near Lake Matthews	1,200	Fall 2007
Elementary School #31	Highgrove near Center St. / Pigeon Pass	750	Fall 2006
Elementary School #32	Near Orangecrest	800	Fall 2006
COS Elementary School	Downtown Area	725	Fall 2006
COS Elementary School	Downtown Area	800	Fall 2006
Total		***4,275***	

Source: Riverside Unified School District 2004

Primary School Demand from UCR Campus

The dependent children of existing students, faculty, and staff contribute to demand for primary schools (including elementary, middle and high schools) in the City of Riverside, the County of Riverside, and the adjacent three-county area of Los Angeles, Orange, and San Bernardino Counties. There is no available data on the number of students with dependent children, other than those student families living on-campus.

As discussed in the Section 4.11 (Population and Housing), there are currently 268 student families that reside in the Canyon Crest Family Student Housing. In addition, there are 3,742 faculty and staff currently employed by UCR, many of whom may have dependents. As a conservative assumption, this analysis assumes that all faculty and staff have dependent children. Any over-estimate as a result of this assumption may offset any underestimation resulting from the inability to estimate the number of students with dependents. Based upon the estimated geographical distribution of population (provided in Table 4.11-4 [Population and Housing]), the residential location of the approximately 4,010 campus-affiliated student families, faculty and staff can be estimated, as shown in Table 4.12-3, below.

Table 4.12-3 Household Location of Existing Campus Population with Dependents

Location	Households
UCR campus	268
City of Riverside (exclusive of campus)	1,871
County of Riverside (exclusive of City)	412
Outside of Riverside County	1,459
Total	***4,010***

Source: EIP Associates 2003

To estimate the number of dependents, using the RUSD student generation rate of 0.6 students per unit, an estimate of the number of primary school students can be estimated, as shown in Table 4.12-4.

Table 4.12-4 Existing Campus-Related School-Age Children

Location	*Number of Students, Faculty, & Staff*	*School-Age Children*
UCR Campus	268	161
City of Riverside (exclusive of campus)	1,871	1,123
County of Riverside (exclusive of City)	412	247
Outside of Riverside County	1,459	875
Total	***4,010***	***2,406***

Source: EIP Associates 2003

Does not include campus visitors and other individuals, or off-campus student families.

Based on RUSD student generation rate of 0.6 students per unit

With approximately 268 students residing on-campus in Family Student Housing and approximately 1,871 faculty and staff living within the City of Riverside, approximately 1,284 campus-related school-age children are potential students at an elementary, middle, or high school in the RUSD.

Libraries

City of Riverside Public Libraries

The City of Riverside maintains six libraries. The Main Library, located at 3581 Mission Inn Avenue, is 61,420 square feet and currently holds approximately 450,000 items. The Arlington Neighborhood Library, 9556 Magnolia Ave, is 4,000 square feet and contains three public access computer workstations. The City has purchased a site for a new facility, but lacks building funds. The Casa Blanca Family Learning Center, 2985 Madison Street has a collection that includes books in English and Spanish, DVDs and spoken books. There is a community meeting room that can be reserved for educational and cultural programs, and a computer training room where Riverside Community College instructors teach classes. La Sierra Neighborhood Library, 4600 La Sierra Avenue, currently stands at 11,000 square feet and includes designated areas for children's programming and collections. The library also has a community room with occupancy for up to 188 persons and contains the Literacy Office for Riverside Public Library. Currently there are five adult and four children's public access stations. Marcy Neighborhood Library, 3711 Central Avenue, is 4,275 square feet and has 2 public access computer workstations. The Eastside Cybrary, 4016 Chicago Avenue, is a satellite service point of the Riverside Public Library. It offers a collection of "virtual" materials found through the Library's online databases, CD-ROM software, and the Internet.

UC Riverside Libraries

UC Riverside currently has four libraries, distributed among the academic centers of the central campus, which serve students, faculty, staff, and the general public. The Tomás Rivera Library houses approximately 2.3 million books, including periodical collections supporting the social sciences, business, education, humanities, and fine arts. The Science Library supports the College of Natural and Agricultural Sciences, the Division of Biomedical Sciences and the College of Engineering. It currently

houses approximately 510,000 cataloged books, maps, journal volumes, CD-ROMS, and DVDs. The Music Library and Music Collections focuses on library collections for the study of music. It is located within three facilities: scores and recordings may be found in the music library, periodicals, and microforms are located in the Rivera Library, and rare and special materials including books and scores are housed in Special Collections on the fourth floor of the Rivera Library. Lastly, the Media Library houses films, audio and video cassettes, video discs, and other media formats.

4.12.3 Regulatory Framework

Federal

There are no federal fire protection, police enforcement, schools, or library services regulations applicable to the 2005 LRDP.

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.[23] 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.

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.

There are no State school or library services regulations applicable to the 2005 LRDP.

4.12.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects. To estimate the potential for implementation of the 2005 LRDP to affect levels of service for fire protection, police protection, schools, and library services in a manner to require new or physically altered government facilities, future demands on these services

[23] 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.

were estimated based on the potential increase in on-campus building space that would result from implementation of the 2005 LRDP, or an increase in a segment of the campus population that requires such services.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on public service if it would result in any of the following:

- 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, or other public facilities

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to Be Significant related to fire protection, police enforcement, schools, or library services; therefore, potential impacts to all these services are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for fire protection, police protection, schools, or other public facilities?

Impact 4.12-1 **Implementation of the 2005 LRDP would not result in significant environmental effects associated with the provision of new or physically altered fire protection facilities to maintain acceptable response times and fire flows. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities intended to accommodate a student enrollment of 25,000 students. The increase in occupied building space and the campus population would increase demands on the fire protection services, resulting in the potential for increased response times and fire flow requirements.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategy is relevant to allowing emergency vehicle access in the central campus.

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.*

(Note: the potential for implementation of the 2005 LRDP to affect emergency access is addressed in Impact 4.14-7 [Traffic and Transportation].)

In addition, continued implementation of existing campus Programs and Practices (PP) 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.

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, intended to accommodate an enrollment of 25,000 students, including housing for 50 percent of students in on-campus or campus-controlled housing. 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 indicated in the existing conditions section, the UCR campus is served by three fire stations located within 2 miles of the UCR campus. The 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, with four firefighters per engine company. This service goal is currently met by all three fire stations serving UCR, which provide a response time of less than five minutes to the campus. Development under the 2005 LRDP would occur entirely within campus boundaries, and thus would not result in any increase in the distance between the existing fire stations and the campus. Assuming that City of Riverside maintains and staffs the existing fire stations near the campus, future on-campus development would continue to be served with a five-minute response time by the RFD and no increase in service response time is anticipated. In addition, the Riverside County Fire Department would continue to assist the City in mutual aid situations. Although the number of calls could increase somewhat due to the increase in campus population, no new, expanded, or altered fire protection services or facilities are required to maintain acceptable response times or distances.

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.

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. Future increases in fire flow demands will be required to maintain adequate water pressure and volume for fire fighting purposes. The LRDP proposes an additional 7 MG storage tank adjacent to the existing 1 MG and 50,000 gallon reservoir on the East Campus, adjacent to the southeastern hills to augment fire flow supply and pressure. 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 (personal communication, Scott Corrin, Campus Fire Marshall, 2002). Environmental impacts of these improvements are addressed on a programmatic basis as part of the overall development analyzed in this 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.

With continued implementation of the identified Planning Strategy and the 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 fire protection facilities to maintain applicable service levels, and this impact would be *less than significant*.

Impact 4.12-2 **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. With implementation of relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities intended to accommodate a student enrollment of 25,000 students. The increase in occupied building space and the campus population would increase demands for police protection services, resulting in the potential for increased response times.

Implementation of LRDP Planning Strategy *Transportation 4* (to limit general vehicular circulation in the central campus, but allow emergency vehicle access), described above under Impact 4.12-1 would assure continued access for emergency vehicles in the central campus. (The potential for implementation of the 2005 LRDP to effect emergency access is addressed in Impact 4.14-7 [Traffic and Transportation].)

During the planning horizon for the 2005 LRDP, the campus would continue to implement the following existing campus Programs and Practices (PP) that would reduce potential impacts on police protection services:

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.*

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, intended to accommodate an enrollment of 25,000 students, including housing for 50 percent of students in on-campus or campus-controlled housing. The

increase in on-campus building space, and the increase in the on-campus population would increase the demand for police protection services that could reduce police response times.

As indicated in the setting, the current emergency response time by the UC Police Department is well under five minutes while non-emergency response time is within 20 to 30 minutes. The incremental increase in the campus population may result in increased response times by the UC Police Department. 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 UC Police Department may need to purchase additional equipment and hire additional personnel. To maintain the current ratio of 1.4 sworn officers per 1,000 persons, an increase in the campus population to approximately 35,540 persons resulting from implementation of the 2005 LRDP would require the provision of an additional 21 sworn officers (in addition to the currently authorized 29 sworn officers) to maintain the existing officer/campus population ratio. However, estimated staffing to population ratios for 2001 at all University of California campuses ranged from 0.7 to 1.6 sworn officers per 1,000 persons. 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 number of students residing on campus, 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 need to hire additional police officers and support staff as necessary during the LRDP planning horizon, and this increased staffing could require modification of the existing UC police department station, or provision of additional space to accommodate the additional staff and equipment. This could include renovation of the existing UC Riverside Police Department facility, expansion of the existing facility, or the acquisition of satellite facility (such as 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 9,320 gsf) 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 are evaluated in this EIR at a program level as part of the proposed project in Sections 4.1 through 4.15. At such time as a specific project is proposed, project level analysis would be done as necessary. The modification, expansion, or construction of police facilities could contribute to the effects on air, noise, traffic, agriculture, and other resource areas that are fully analyzed for the 2005 LRDP. With the incorporation of mitigation discussed in other sections of this document and provided in the Executive Summary, and due to the relatively small amount of space that might be constructed or small areas that could be disturbed, 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 police protection 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 UCPD sharing responsibility for response to near-campus service calls and incidents. In turn, RPD would continue to provide emergency back-up to UCPD. As noted in Section 4.11 (Population and Housing), no increase in off-campus student residential population is anticipated to result (in part, due to the substantial increase in on-campus housing). In addition, all 2005 LRDP development would occur on the campus. Because there would not be an increase in the off-campus student residential population or development, implementation of the 2005 LRDP would not directly increase the need for patrols in off-campus residential areas. An increase of approximately 6,531 campus-affiliated population within the City would increase the population served by the Riverside Police Department, although this increase would be nominal in comparison to the City population of over 250,000 persons.

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*.

Impact 4.12-3 **Implementation of the 2005 LRDP would increase the number of school-age children in local school districts, including the Riverside Unified School District, but would not result in significant environmental effects associated with the provision of new or physically altered school facilities to accommodate the increased demand for student services. Impacts would be *less than significant*.**

Implementation of the 2005 LRDP would result in an increase in the number of student families living on campus and increase the number of faculty and staff employed by UCR, which would increase the potential number of school-age children in local school districts. Based upon the current geographic location of on-campus student families, faculty, and staff (provided in Table 4.11-20 [Population and Housing]), the location and number of future school-age children can be estimated, based on the RUSD student generation rate of 0.6 student per dwelling unit, as shown in Table 4.12-5.

With a net increase of approximately 4,878 students (with families living on campus), faculty, and staff, an increase of approximately 3,531 new school age children would result from LRDP implementation of the 2005 LRDP. Of these, approximately 1,524 would reside within the Riverside Unified School District Service area, which would increase enrollment demand within the District. The additional number of school age students in the County of Riverside and in the three-county area of Los Angeles, Orange, and San Bernardino Counties would total 2,007.

Table 4.12-5 Future Campus-Related School-Age Students

Location	*Net New Students, Faculty &/or Staff Housing Units*	*School-Age Students*
UCR Campus [a]	446	268
City of Riverside (exclusive of campus)	2,093	1256
County of Riverside (exclusive of City)	1,169	701
Outside of Riverside County	2,176	1,306
Total	***5,884***	***3,531***

Source: EIP Associates 2003

Does not include campus visitors and other individuals, or an estimate of off-campus student families.

Based on RUSD student generation rate of 0.6 students per unit

This analysis includes students that would be located off-campus, within the City, County, and outside the County; which are not anticipated to increase the number of school-age children in local districts; thus, this table provides a conservative analysis of school-age students.

[a] Based on net new on-campus family student housing.

It is assumed that the geographic distribution of population associated with the LRDP would be similar to existing patters, as shown in Table 4.11-4 in Section 4.11, Population and Housing. This would result in 11 percent of students in Riverside County, and 39 percent of students in Orange, San Bernardino, and Los Angeles counties. New development of private residential projects in these areas would be subject to school impact fees, and payment of these fees would partially reduce impacts on local schools. Per Government Code Sec. 65996, impact fees are the exclusive method for mitigating impacts on school facilities. Further, given the probable geographic dispersal of future faculty and staff, it is unlikely that an additional 2,007 students would result in a substantial demand on any other school districts or any specific school.

The addition of new students to the RUSD resulting from the LRDP would increase demands at existing schools. While some schools within the RUSD have additional capacity (Hyatt Elementary, Emerson Elementary, University Heights Middle School, Gage Middle School), other schools exceed their existing capacity (Longfellow Elementary, Highland Elementary, North High School, Poly High School). However, the RUSD has planned capacity increases for 4,275 students as a result of planned growth, and this expansion would occur independently from the proposed project.

The campus is exempt from payment of school impact fees in connection with campus-controlled residential facilities constructed pursuant to the 2005 LRDP. As such, impact fees associated with this development would not be available to local school districts. However, as discussed above, it is assumed that new development of private residential and commercial projects off campus resulting from increased housing demand from overall growth in the area in the Riverside area would be subject to school impact fees. Payment of these fees would partially reduce impacts on local schools. In addition, school districts have a variety of options available to respond to the issue of University projects contributing more students to them. 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, because building a new school is only one of several options available for addressing the contribution of more school-age children to the local school districts, it would be unduly speculative to assume that a new building would be necessary.

Implementation of the 2005 LRDP would result in an increase in the number of students attending RUSD schools that would be below the planned increase in District capacity, such that the District would have the ability to accommodate new students in addition to those generated by the proposed project. Increases in District capacity could occur from planned expansions in addition to a variety of planning options identified above that could further increase enrollment capacity. The proposed project would not result in significant environmental impacts associated with the provision of new or altered school facilities to accommodate increased demand in the Riverside Unified School District, and this impact would be *less than significant*.

Impact 4.12-4 **Implementation of the 2005 LRDP would not result in significant environmental impacts associated with the provision of new or altered library facilities to meet demand for library services. This impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities intended to accommodate a student enrollment of 25,000 students and increase employment of faculty and staff, which could increase the demand for library services.

The program for the 2005 LRDP includes a net increase of approximately 2.89 million gsf of academic program space, including administration and libraries. On-campus library services would be expanded from the current four libraries, although the precise number and location of libraries has not been determined. Libraries would contribute to the campus community by serving as comprehensive learning resource centers, with access to knowledge databases as well as traditional books and journals. New libraries under the LRDP could include changes in the types and amount of space devoted to books, computing stations, individual and group study areas, and network communication capabilities. Online access to library resources could also continue to reduce the need to be physically present at a library to access many of these resources. Additional satellite libraries may also be developed under the LRDP; for example, as part of professional school development. The potential environmental effects associated with development of satellite libraries are evaluated as part of the programmatic analysis of construction impacts in Sections 4.1 through 4.15 of this EIR. The construction of new libraries could contribute to the effects on air, noise, traffic, agriculture, and other resource areas that are fully analyzed for the 2005 LRDP. With the incorporation of mitigation discussed in other sections of this document and due to the relatively small amounts of library space that might be constructed or small areas that could be disturbed, the construction of these facilities would not individually result in significant environmental impacts.

As discussed in Section 4.11, Population and Housing, implementation of the 2005 LRDP would increase the campus-affiliated population by approximately 26,266 persons, including students, student families (living on campus), faculty, and staff in total. Of these persons, approximately 9,299 would be enrolled students, reside on campus, or would be employed on campus, and therefore would have

convenient access to on-campus library resources. The remainder of the projected increase, household members and dependants of UCR faculty and staff, would represent approximately 16,967 persons that may have need for library services. Because those persons would not reside on the UCR campus or would not be employed by UCR, they would not have convenient access to UCR library resources. These persons would reside within the City of Riverside, the County of Riverside, and the surrounding three-county area of Los Angeles, Orange, and San Bernardino counties, and would contribute to the demand for local library services based on their residential location. Based on the geographic distribution of faculty and staff (as described in Section 4.11, Population and Housing), as shown in Table 3.11-18, an increase of approximately 6,531 household members of student families, UCR faculty, and staff would reside in the City of Riverside, approximately 6,531 would reside in the County of Riverside, and 3,647 would reside in the three-county area of Los Angeles, Orange, and San Bernardino Counties. Based on the probable dispersed location of the campus-affiliated population in Riverside County and the adjacent three-county areas, the LRDP-related increase in population is not anticipated to result in any substantial increases in the demand for library services within any jurisdiction or at any local library facility.

The increase in campus-affiliated population in the City of Riverside would contribute to demand for library services within the City of Riverside. The City of Riverside currently provides library services from the Main Library, three branch libraries, one learning center and two "cybrary" satellite facilities that serve the existing population of approximately 259,738 persons. The increased service population is not anticipated to require new or altered library facilities to meet this relatively small increase in service demand.

Because expanded library services would be available on campus, implementation of the 2005 LRDP would not require the construction of new or physically altered facilities to accommodate the increased off-campus demand for library services, and this impact would be *less than significant*.

4.12.5 Cumulative Impacts

The geographic context for the analysis of cumulative public services impacts is the City of Riverside and the RUSD boundaries (which coincide), including all cumulative growth therein, as represented by full implementation of the City of Riverside General Plan and development of off-campus related projects, as discussed on Section 4.0 (Introduction to the Environmental Analysis).

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. Cumulative impacts would not be significant. In the case of police enforcement, the campus is served by the UC Police Department. As required by State law, the UC Police Department also has an MOU with the City of Riverside Police Department (RPD), allowing the two departments to provide assistance to each other. Implementation

of the 2005 LRDP can also be accommodated within the existing police and fire protection service capabilities, and Programs and Practices would continue to be implemented to ensure fire and police continue to meet demands. Thus, the proposed project's contribution to cumulative impacts would not be significant.

Increased residential development off campus would generate additional demand for public school classroom seating capacity within RUSD. The degree to which this demand would be satisfied will depend on future enrollment trends and other facility decisions made by the RUSD Board of Education. As discussed above, the RUSD has plans to increase student capacity by 4,275 students in order to accommodate projected increased growth, and impacts from facilities expansion associated with these plans are addressed under project-specific CEQA review, which would occur irrespective of the proposed project. All new private sector development will be required to pay impact fees to RUSD to help fund construction of additional classroom capacity. In addition, the District has a variety of options to meet increased demands from an increasing student population, including but not limited to development of new schools. The proposed project would not increase the numbers of students at local schools by a number greater than the planned increase in capacity. Impacts would not be cumulatively considerable, and the proposed project would not have a cumulatively considerable contribution to this impact.

As additional development occurs in the City of Riverside, there may be an overall increase in the demand for library services. Population increases in the project area would cause an incremental increase in demand on these facilities. Increases in demand are routinely assessed by these agencies as part of an annual monitoring and budgeting process in order to ensure that demands are met. In addition, the proposed project would contribute to library resources through the provision of additional facilities on the campus, which would be accessible to the general public. Impacts would not be cumulatively considerable. The project would not result in a cumulatively considerable contribution to this impact.

4.12.6 References

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4.13 RECREATION

4.13.1 Introduction

This section describes existing recreational resources at UCR and in the project vicinity, and analyzes the potential for the project to increase the use of existing parks or other recreational facilities, resulting or accelerating substantial physical deterioration of a facility, or requiring construction or expansion of additional facilities.

Data used in the preparation of this section were taken from various sources, including previous environmental documentation prepared for the UC Riverside campus, the UCR Recreation and Sports Facilities Needs Assessment, and personal communication with campus recreational and sports facilities department. Bibliographic entries for reference materials appear in Section 4.13.5 (References) of this section.

Nine comment letters related to recreation were received on the Notice of Preparation circulated for the project. Commenters requested that the EIR address impacts to open space and designated parkland, impacts from loss of campus open space on open-space-dependent recreational resources in the vicinity of UCR, impacts to the City of Riverside from loss of parkland, effects of growth on the need for and use of recreational opportunities outside of developed recreational facilities on the campus, and student use of local parks. These comments are addressed in the scope of this EIR or are beyond the scope of analysis required by CEQA. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.13.2 Existing Conditions

The UCR campus currently provides approximately 46.1 acres of active recreational space and approximately 98,269 gsf of developed recreational facilities (e.g., recreation buildings) that are used for physical education, intercollegiate athletics, intramural sports, sports clubs, and general recreation. Existing formal recreational facilities consist of the following:

- UCR Football/Track Stadium
- Student Recreation Center (SRC)
- SRC Outdoor Recreation Complex
- Lower Intramural Fields
- Riverside Sports Complex

Facilities such as the baseball and softball stadiums are dedicated to National Collegiate Athletic Association (NCAA) sports. Table 4.13-1 contains field acreages as well as descriptions of programs that utilize the various campus facilities and spaces.

In addition to the facilities listed in Table 4.13-1, the interior grass field of the UCR Football/Track Stadium is available for other uses. A single, stand-alone, field within the Lower Intramural Fields results in recreational league programming four nights per week from 5 P.M. to 12 A.M.

Table 4.13-1 Recreation Space, Multi-Use Facilities, and Open Space

Facility/Space	*Field Acreage*	*Programs*
Recreation Space and Multi Use Facilities		
Student Recreation Center	3.8 acres	80,000-sf facility with four racquetball/volleyball courts, one squash court, a 6,000-square foot weight training facility, a 3,000 square foot area dedicated to cardio-fitness machines. The center also has full locker rooms, three multipurpose rooms, and a four-court gymnasium.
UCR Sports and Recreation Complex	5.8 acres	Ten tennis courts, two sand volleyball courts, two basketball courts, a full sized roller hockey rink that can be converted into two full-length basketball courts, and an eight-foot wide jogging trail. All the facilities are lighted for evening use.
UCR Softball Field	2.6 acres	One fully-improved softball field, including signage, wind screens, enclosed dugouts, a scoreboard, and PA system.
UCR/Riverside Sports Complex	18.1 acres	2,500-seat baseball stadium. This facility is jointly owned and maintained by UCR and the City of Riverside and is on campus land.
Ag-Ops Cross Country Course	N/A	Cross-country course, located adjacent to campus through the 420-acre Citrus Research and Agricultural Experiment Station (CRC-AES) on the corner of Martin Luther King Boulevard and Canyon Crest Drive.
Lower Intramural Fields	9.6 acres	Two regulation soccer fields, softball field
UCR Track	6.2 acres	Track and Field Stadium, including a dedicated throwing facility (hammer throw/discus cage and shot put platform).
UCR Fitness Center	N/A	5,100-sf facility with extensive cardiovascular and weight training machines, traditional free weights. Available to Highlander intercollegiate teams, physical education classes, students, and staff.
Challenge Ropes Course	N/A	Outdoor "ropes course"
Physical Education Building	N/A	Intercollegiate Athletic Offices, for credit physical education programs (lifeguard, first aid training, and sports)
Physical Education Courts	N/A	These courts supplement the courts by the Student Recreation Center.
Physical Education Pool	N/A	Multi-lane outdoor swimming pool
Subtotal	*46.1*	*N/A*
Passive Open Space		
West Campus	0	Agricultural fields, no open space for passive recreational use
East Campus	144.2	Approximate acreage based on 2005 LRDP acreage, which would keep passive open space on the East Campus approximately constant
Open Space Reserve		
East Campus	130.5	Southeastern hills, including trails used for jogging or hiking
Total	***320.8***	

Source: *Recreation and Sports Facilities Needs Assessment*, UCR, January 2001; *2005 LRDP*, UCR, 2003

The SRC currently houses four multi-use indoor courts, four racquetball courts, one squash court, three multi-use rooms, and a weight room/fitness center. This facility is near maximum utilization levels with more than 1,000 persons visiting each day during the academic year. The SRC Outdoor Recreation Complex includes two basketball courts, two sand volleyball courts, ten tennis courts, and one hockey rink with two overlaid basketball courts.

The Lower Intramural Fields are heavily used, and current programming needs cannot be adequately accommodated at that location. Despite intensive efforts by the Grounds Department (i.e., constant field maintenance, fertilizing, etc.) the ground cover on the fields is in poor condition due to continual use. In order to remain competitive, both men's and women's varsity soccer teams require use of the lower fields, increasing the burden on these fields. However, dedicating a portion of the fields for this purpose substantially affects the intramurals program, forcing it to reduce the number of leagues and teams currently offered (UCR 2001).

The Riverside Sports Complex, located on Campus property at the southwest corner of Canyon Crest Drive and Blaine Street, is currently shared with the City of Riverside Park and Recreation Department. The 50/50 agreement assigns use of the fields to UCR on Monday, Tuesday, Thursday, and Friday. The City has possession Wednesday, Saturday, and Sunday. This facility consists of two regulation slow pitch softball fields and enough space in the outfield for two full size multi-use fields. Recreation Intramural Sports currently programs softball, soccer, and flag football on the nights available. The City also fully utilizes its share of time for its programming. The condition of the grass outfield areas on this facility is currently heavily damaged and extensive repair work is necessary.

Recreation and sports facilities are an essential part of campus life on UC campus. The campus has established a parkland-to-persons ratio of 3 acres per 1,000 persons. Based on the current (2000/01) campus population of 17,641 students, faculty, and staff (and on-campus student families), a need of approximately 53 acres of park or field space can be estimated. With approximately 144 acres of open space on the East Campus (not including the Open Space Reserve in the southeast hills), a total of approximately 320.8 acres of recreational and open space (passive and reserve) currently exists on campus, which results in a current parkland to persons ratio of approximately 18.2 acres per 1,000 persons. However, only 46.1 acres is active recreational space. Therefore, while the total acreage of open space and recreational facilities sufficiently meets and exceeds the established campus ratio, there is a shortfall of developed, formal recreational space on the UCR campus.

Table 4.13-2 summarizes UCR's existing sports and recreation facilities programming needs (including rule of thumb per headcount) and whether or not current facilities are adequate. The table also projects recreation program needs through academic year 2010/11.

Table 4.13-2 UCR Sports and Recreation Facilities Programming Projections

Facility and Location	*Rule of Thumb per Headcount*	*2000/01 Existing*	*2001/02 Total Needed*	*2010/11*	*Are Existing Facilities Adequate for Current Demands?*
Outdoor Lighted Multi-Use Fields Lower IM Fields (2) Riverside Sports Complex (2) Track Stadium (1)	1 per 2,500	5	7	11	No
Outdoor Basketball Courts SRC Annex Complex (4) Includes two within the hockey rink	1 per 2,500	4	7	11	No
Indoor Multi-Purpose Courts (basketball, badminton, volleyball) Student Recreation Center	1 per 2,500	4	7	11	No
Multi-Use Hockey/Basketball/"Indoor" Soccer SRC Annex Complex	1 per 2,500	1	7	11	No
Sand Volleyball Courts SRC Annex Complex	1 per 2,500	2	7	11	No
Racquetball/Handball Student Recreation Center	Unknown	4	4	N/A	Yes
Squash Student Recreation Center	Unknown	1	1	N/A	Yes
Recreational Softball Diamonds	1 per 7,500	2	2	4	No
Baseball Stadium	1 per campus	1	1	1	Yes
Softball Stadium (Need upgrade for Division I; current location subject to displacement due to Alumni Center, parking structure)	1 per campus	1	1	1	Yes
Soccer Competitive Pitch with Spectator Seating (A portion of the lower athletic fields has been converted to this use)	1 per campus	None; Need for Division I	1	1	No
Soccer Practice Pitch (A portion of the lower athletic fields has been converted to this use)	1 per campus	None; Need for Division I	1	1	No
Track with Field Events Venue with Seating	1 per campus	1	1	1	Yes
Swimming Pool—Recreational (recreational classes, open swimming)	1 major pool per 15,000	Hsg. Pools @ U.P Bburn, H.Hall[a]	1	1	No
Swimming Pool—Instructional/Competitive For swimming, diving, and water polo uses.	1 per campus depending on programs	1	1	1	No
Tennis Courts SRC Annex Complex (10) Physical Education (7)	1 per 1,000	17	17	28	Yes

Source: *Recreation and Sports Facilities Needs Assessment*, UCR, January 2001

[a] This pool is not open to all persons on campus, as it is used for instructional purposes (e.g. Water Safety, etc classes)

City of Riverside

The City of Riverside Parks and Recreation Department currently uses its 1965 park standards for planning purposes, prepared by the City Planning Department. That plan identifies three broad categories for park development:

- *Neighborhood*—Neighborhood park standards call for a minimum of 10 acres of improved parklands to serve a population of 3,000 to 5,000 people within a one-half mile service radius; if these parks are directly associated with a school site, the required acreage is reduced to 6 acres
- *Community*—Community parks are larger in size and may range from 20 to 30 acres with a service radius of one to two miles, serving a population of 13,000 to 30,000 people
- *Citywide*—The citywide designation is less defined, as it does not specify population or locational criteria; the citywide park designation includes a wide variety of special use facilities and should generally be developed in large parcels

Table 4.13-3 lists the 18 City of Riverside public parks that are within approximately two miles of UCR. Parks within the vicinity of UCR are considered to be in fair condition, and no plans currently exist for new park development. The total available acreage of City parks in the vicinity of UCR is 1,002.35 acres. These parks include all three of the City park categories and undeveloped sites. Generally, the developed parks are part of existing neighborhoods, while undeveloped park sites have been set aside for areas of future development of vacant land.

County of Riverside

The County of Riverside Open Space and Recreation Department administers large units of parkland that serve the population of a regional area. The 2,389-acre Box Springs Mountain Park is the nearest unit of the regional park system to UCR and provides for the area's needs for riding and hiking trails and picnic areas.

Table 4.13-3 City of Riverside Public Park Acreages

Facility	*Location*	*Developed Acres*	*Undeveloped Acres*	*Total Acres*
Andulka	5079 Chicago	0.0	27.9	27.9
Bobby Bonds	2060 University	15.1	0.0	15.1
Bordwell	2008 Pennsylvania	8.9	14.1	23.0
Highland	780 Glenhill	7.1	0.0	7.1
Hunter	1400 Iowa	25.8	10.0	35.8
Islander [a]	3794 Mt. Vernon	2.0	20.1	22.1
Lincoln	4261 Park	3.7	0.0	3.7
Mt. Vernon	3200 Valencia Hill	0.0	8.3	8.3
North	3172 7th	1.4	0.0	1.4
Patterson	1846 Linden	4.6	0.0	4.6
Reid	801 N. Orange	28.9	12.1	41.0
Riverside Sports Center	1014 Blaine	17.7	0.0	17.7
Swanson	5723 Glenhaven	1.2	0.0	1.2
Sycamore Canyon	5300 Central	0.0	483.85	483.85
Dario Vasquez	2400 Fourteenth	1.8	0.0	1.8
Fairmount	2601 Fairmount	165.3	0.0	165.3
Mt. Rubidoux	4706 Mt. Rubidoux	0.0[b]	152.9	152.9
White	3936 Chestnut	6.0	0.0	6.0
Total		***289.50***	***729.25***	***1,018.75***

Source: City of Riverside Parks and Recreation Department List of Public Parks, 2001

[a] Most of the Islander Park site lies within the 100-year floodplain (as defined by FEMA). The floodplain area was the location of a potential City/UCR partnership to develop flood control basins and restore native plant communities to the "disturbed" area, provide native trails, a tot-lot, and parking lot improvements. The project was delayed by a CEQA lawsuit and the campus will be developing an on-campus floodplain reduction solution to the extent of the 100-year floodplain on campus. The City may pursue a flood control project utilizing the Islander Park site. The certainty and timing of that is uncertain at this time.

[b] Crossed by 1.75-mile-long linear path.

4.13.3 Regulatory Framework

Federal, State and Local

There are no federal, State or Local recreational facilities regulations applicable to the 2005 LRDP.

4.13.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps 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 UCR 2005 LRDP to result in increased use of neighborhood and/or regional parks, or affect recreational opportunities, existing recreational and open space facilities on-campus were compared to projected facilities. The increase in recreational facilities was compared to the projected increase in the campus population to determine if the additional recreational facilities proposed

would meet increased demands from the projected enrollment increase. The potential for the project to result in impacts from the expansion of park facilities was determined by evaluating the potential for the recreational component of the LRDP when considered apart from other LRDP development to result in construction impacts.

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on recreation if it would do any of the following:

- Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated
- Propose the construction of recreation facilities or require the expansion of recreation facilities, which might have an adverse physical effect on the environment
- Affect existing recreational opportunities[24]

Effects Not Found to Be Significant

The Initial Study did not identify any Effects Not Found to Be Significant related to recreation; therefore, all potential recreational impacts are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Impact 4.13-1 **Implementation of the 2005 LRDP would increase the campus population and result in additional demand for recreational space. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the UCR 2005 LRDP would result in the development of new buildings and facilities, including on-campus housing and the development of additional on-campus recreational facilities. Development would accommodate an increase in student enrollment and corresponding increase in the campus population. The development of additional facilities would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

During the planning horizon for the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including one relevant to the provision of additional campus recreational facilities.

[24] This threshold is not included in Appendix G and was added to specifically address the potential impacts to UCR's existing recreational opportunities from implementation of the 2005 LRDP.

PS Open Space 7 *Provide neighborhood parks and tot lots in the family housing areas as neighborhood open space.*

Implementation of the UCR 2005 LRDP would result in development of approximately 7.1 million gsf of academic and support facilities on the UCR campus, which would include approximately 371,731 gsf of recreational facilities. Recreational fields are planned in the area east of the Pentland Hills and Lothian Residence Halls, on the southern edge of the redeveloped Family Student Housing, and west of Iowa Avenue on the West Campus (north of Martin Luther King Boulevard). Neighborhood park space including tot lots would be developed in conjunction with the new Family Student Housing on the West Campus, which would augment existing fields associated with the sports complex and track and field stadium. In addition, new student housing facilities would have recreational areas, which would typically include hardcourt areas and/or turf fields.

The proposed program for recreational facilities in the 2005 LRDP would result in a total of approximately 67.5 acres of athletic and recreational land uses and approximately 169.4 acres of open space (on the East and West Campuses), for a total of approximately 236.9 acres of recreational and open space. With a projected campus population of approximately 35,540 students, faculty, staff and other individuals (including student families living on-campus), this would represent a parkland-to-persons ratio of approximately 7 acres per person, above the established 3 acres/1,000 person ratio. In addition, recreational building space would increase by approximately 371,731gsf, adding to the total area of active recreational space on the campus. Recreational space would be for the use of campus-affiliated persons.

With the provision of additional recreational and athletic space, recreational building space, provision of neighborhood parks adjacent to new Family Student Housing and additional open space for passive recreation on the West Campus, the implementation of the 2005 LRDP would meet the recreational needs of the UCR campus population. The existing short fall in formal recreational opportunities would be addressed through the 371,731 gsf increase in recreational opportunities, and, similar to existing conditions, the parkland-to-persons ratio would exceed thresholds by two times. As a result, students, faculty, and staff are not anticipated to rely on existing neighborhood and regional parks or other recreational facilities instead of campus facilities such that substantial physical deterioration of the facility would occur or be accelerated.

As discussed in Section 4.10 (Population and Housing), the increase in campus population would also increase the number of persons that are affiliated with UCR (e.g., household members of UCR students, faculty, and staff). The estimated distribution of those persons (not including UCR students, faculty, and staff, who could access on-campus recreational facilities) was estimated in relation to the potential for impacts to community libraries in Impact 4.12-4 (Section 4.12, Public Services). The LRDP-related growth in household members of UCR faculty, and staff would increase by approximately 4,424 in the City of Riverside, approximately 974 in the County of Riverside, and 1,331 in the three-county area of Los Angeles, Orange, and San Bernardino Counties. There would be no increase in students in the City,

due to the substantial increase in on-campus housing, as discussed in Section 3.11, population and housing.

The City of Riverside has a variety of park and recreation facilities to serve the existing population of approximately 259,738 persons. Increased demand for recreational facilities from an additional 4,424 persons in the City of Riverside is not anticipated to increase the use of existing neighborhood and regional parks or other recreational facilities such that the substantial physical deterioration of the facility would occur or be accelerated. As noted in the setting, eighteen City-operated parks and recreational facilities are located within approximately 2 miles of the UCR campus. Based on the probable dispersed location of the campus-affiliated population in Riverside County and the adjacent three-county areas, the LRDP-related increase in population would not result in any substantial increases in the use of any individual existing neighborhood or regional parks.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, and this impact would be *less than significant*.

Threshold	Propose the construction of recreation facilities or require the expansion of recreation facilities, which might have an adverse physical effect on the environment?

Impact 4.13-2 **Implementation of the 2005 LRDP would include construction of recreational facilities that may have an adverse physical effect on the environment. This impact would be *less than significant*.**

Implementation of the UCR 2005 LRDP would result in the development of new buildings and facilities, including the development and siting of new recreational facilities, which could result in adverse physical impacts on the environment, during the construction period. Development of new recreational facilities are one component of the overall LRDP program, and as such, are part of the whole of the action that is analyzed in this EIR.

The construction of new recreational facilities has the potential to result in disturbance to the on-site environment, and the extent of impacts would depend on the existing character of the site. Projected development includes a total of 371,731 square feet of recreational facilities. Athletic playing fields would also require ground disturbance of between 0.5 to 2.5 acres, depending on the specific use of the field. Playing fields would include those proposed west of Iowa Avenue on the West Campus, and fields adjacent to proposed housing west of Valencia Hills Drive and north of Linden Street on the East Campus. These physical alterations involve a considerable amount of development potentially over a large area. The potential environmental effects associated with expanding recreational facilities and playing fields are evaluated as part of the programmatic analysis of construction impacts in Sections 4.1 through 4.15 of this EIR. The modification, expansion, or construction of recreational facilities could contribute to the effects on air, noise, traffic, agriculture, and other resource areas that are fully analyzed for the 2005 LRDP. Due to the relatively large amount of space that might be constructed or that could

be disturbed, the construction of these facilities could individually result in significant environmental impacts during construction. Implementation of LRDP Planning Strategies, existing Programs and Practices, and Mitigation Measures discussed in other sections of this document would address these impacts to the extent feasible. With respect to air quality, earth moving activities in areas between 0.5 to 2.5 acres would result in significant air emissions. Construction activities would comply with all SCAQMD rules and regulations, implementation of dust control measures consistent with SCAQMD Rule 403, and use of other construction techniques that would minimize air emissions. Nevertheless, air quality impacts associated with the construction of all new facilities permissible under the 2005 LRDP cannot be mitigated to a less-than-significant level, as discussed under Impact 4.3-2 would be significant and unavoidable. However, impacts associated with the construction of new recreational facilities or the expansion of existing facilities would not have an adverse physical effect on the environment, beyond those identified elsewhere in this EIR. Impacts of construction or expansion would be *less than significant*.

Threshold	Would the project affect existing recreational opportunities?

Impact 4.13-3 **Implementation of the 2005 LRDP would result in the conversion of existing recreational fields to nonrecreational uses and construction of new ones. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the UCR 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures to accommodate an increase in student enrollment and corresponding increase in campus population. The development of additional facilities on the UCR campus would result in displacement of existing recreational facilities on the lower intramural fields but the fields would be replaced at other locations over time to provide sites for academic and support facilities.

With implementation of LRDP Planning Strategy *Open Space* 7, described above under Impact 4.13-1, development under the 2005 LRDP would provide extensive new recreational space. The proposed Land Use Plan would result in a loss of the Lower Intramural Fields. These existing playing fields would be replaced with academic and support uses. The Lower Intramural Fields are subject to flooding during a 100-year storm event, and new development would be subject to this constraint. This issue is discussed under Impact 4.8-9 in Section 4.8 Hydrology and Water Quality, and as noted there, future flood control improvements are anticipated to reduce the floodplain and remove this issue. As described above under Impact 4.13-1, new facilities planned on the southern portion of the redeveloped Family Student Housing site and east of Pentland Hills would generally replace these playing fields. Overall, a total of 67.5 acres of active recreational space would be available on campus upon implementation of the 2005 LRDP. As discussed under Impact 4.13-1, a total of approximately 236.9 acres of recreational and open space would be provided under 2005 LRDP buildout to serve the increased campus population, resulting in a parkland-to-persons ratio of approximately 7 acres per 1,000 persons, well above the established 3 acres/1,000 person ratio. Thus, the loss of the Lower Intramural Fields would be offset by the increased recreational opportunities elsewhere on the campus.

Therefore, as implementation of the 2005 LRDP would compensate for the loss of existing recreational fields on campus by replacing these recreational opportunities elsewhere on the campus, this impact would be *less than significant*.

4.13.5 Cumulative Impacts

The geographic context for the analysis of cumulative recreational impacts is the City and County of Riverside, including all cumulative growth therein, as represented by the County of Riverside General Plan, the City of Riverside General Plan, and development of the off-campus related projects, as discussed in Section 4.0 (Introduction to Environmental Analysis).

The rationale for including the entire County is that a portion of the students, faculty, and staff who commute to UCR live off campus. Therefore, they may utilize a variety of recreational facilities and programs offered by the campus and/or the City or County of Riverside or other jurisdiction where they live if other than the City of Riverside. As noted in the analysis under Impact 4.13-1, the increase in off-campus population would be limited to family members of faculty and staff, rather than students, as no increase in the student population in the City is expected. Related projects would include 1,092 dwelling units in the vicinity of the campus, in addition to other new residential development throughout the City. As cumulative residential development in the City and/or County is approved, in-lieu fees for parks or donation of parkland (pursuant to the Quimby Act) would be required as part of the individual projects. In addition, grants from State and county bond sources (e.g., Proposition 12) are available to fund additional park and recreational facilities in urban areas. These funding sources would provide additional sources of funding for parkland and recreational facilities in the City or County to satisfy demand from future population growth. Therefore, impacts on park and recreation facilities are not anticipated to be cumulatively considerable as a result. As described in Impact 4.13-1, a significant increase in the demand for off-campus recreational facilities is not anticipated as a result of implementation of the 2005 LRDP, and on-campus recreational facilities will continue to be provided for students, faculty, and staff. Since adequate facilities would be provided on campus, implementation of the 2005 LRDP would not increase demand for parkland and recreational facilities in the City or County of Riverside, and thus the contribution of the 2005 LRDP to cumulative impacts is not cumulatively considerable.

It is further anticipated that in order to accommodate future cumulative demand for park and recreation facilities, additional facilities will be developed and constructed throughout the City of Riverside. Because the size, location, and type of these future facilities is not known at this time, it is impossible to assess the magnitude of cumulative impacts associated with the construction of these facilities. However, it is reasonable to expect that all of these facilities will undergo CEQA review and that project-specific impacts associated with development of each of these facilities will be mitigated to the extent feasible and would not result in impacts beyond those identified in a project-specific CEQA review. As a result, impacts associated with construction of future park and recreation facilities are not expected to be cumulatively considerable. The LRDP includes additional recreational facilities proposed for both the East and West Campuses. The impacts of recreational facility construction are assessed as part of overall

project impacts. While construction of the proposed project as a whole is expected to have a number of impacts, a portion of which may be attributable to construction of the recreational facilities, this construction activity is not anticipated to result in a cumulatively considerable impact when considered in conjunction with the construction of future park and recreation facilities elsewhere in the City of Riverside. As a result, the cumulative impacts from construction of park and recreational facilities countywide would not be significant.

4.13.6 References

EIP Associates. 2002. *UCLA 2005 LRDP Draft Environmental Impact Report*, SCH No. 2002031115.

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University of California, Los Angeles. 2003. *UCLA Long Range Development Plan Final Environmental Impact Report*, SCH No. 2002031115. February

University of California, Riverside (UCR). 1990. *Final Environmental Impact Report on the 1990 Long Range Development Plan* (FEIR), SCH No. 90020114.

———. 2001. *Recreation and Sports Facilities Needs Assessment*, January.

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 2005 LRDP to cause: an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system; exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways; substantially increase traffic hazards due to design features or incompatible uses; result in inadequate emergency access; result in inadequate parking capacity; or conflict with applicable policies, plans, or programs supporting alternative transportation.

The information in this section is based upon information in the UC Riverside LRDP EIR Traffic Impact Study conducted by Wilbur Smith Associates (WSA), which is included as Appendix H in this document. Bibliographic entries for reference materials appear in Section 4.14.6 (References).

The Initial Study prepared for this project (included as Appendix A of this document) determined that the project would not result in changes in air traffic patterns and therefore no analysis of air traffic patterns is provided herein.

Fifteen comment letters related to traffic and transportation were received on the Notice of Preparation circulated for the project. Comment letters requested that the EIR address impacts to both the I-215 and SR-60 freeways; preparation of the analysis in conformance with the Caltrans Guide for the Preparation of Traffic Impact Studies; analysis of the LRDP's conformance with applicable SCAG policies; assessment of impacts to the Metrolink System and to the I-215 corridor; ensuring opportunity for comment on the DEIR by the City of Riverside, County of Riverside, City of Moreno Valley, and Riverside Transit Authority; assessment of impacts to the I-215 between I-10 and SR-60, as well as the potential for rail-grade separations, from the project; assessment of impacts of traffic on neighborhoods; identification of impacts from increased parking demand; analysis of public safety issues stemming from increased bike and pedestrian traffic; analysis of impacts from the proposed parking structure planned for Lot 13; analysis of impacts from truck traffic, traffic patterns through nearby neighborhoods, off-campus growth impacts, and development of environmentally friendly transit alternatives, such as pedestrian walkways, bikeways, and shuttles. Commenters also suggested provision of alternative transportation access for pedestrians and bicyclists as part of a comprehensive alternative transportation plan for the expanded campus and a network of designated bike paths, connected to downtown or the river bottom bike path near Mt. Rubidoux (Santa Ana River Trail). The Notice of Preparation, those responses written to the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.14.2 Existing Conditions

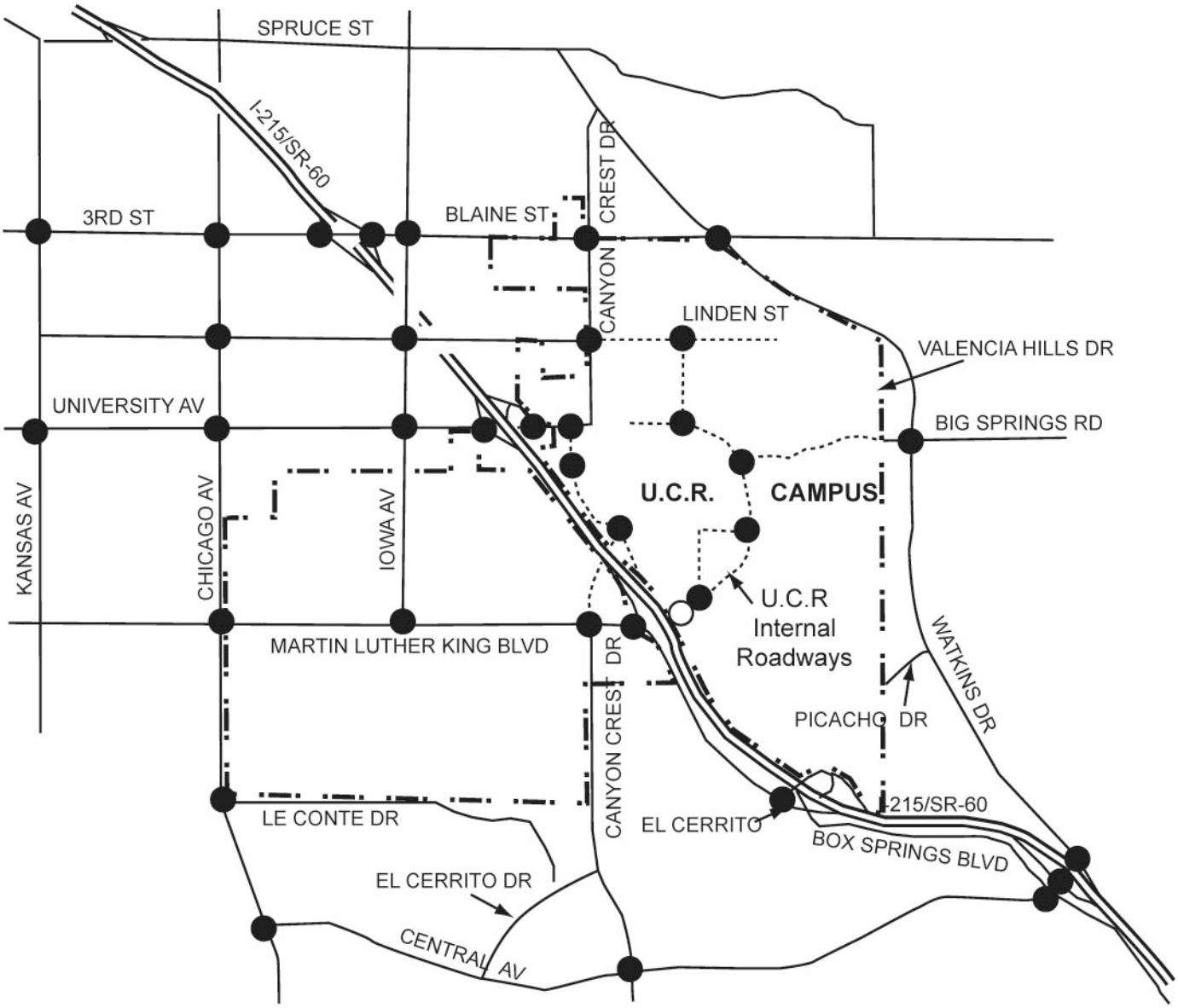
Highway and Street Network

The University of California, Riverside (UCR) campus is located in the City of Riverside, and is bisected by the Interstate 215/State Route 60 freeway. A discussion of the main roadways within and adjacent to the campus is provided below. Figure 4.14-1 depicts the location of the 35 existing study intersections (consisting of 22 signalized and 13 unsignalized intersections), and one new intersection that will be constructed by 2015, that will be analyzed in this EIR. The 22 existing signalized intersections are:

- 3rd St./Kansas Ave.
- 3rd St./Chicago Ave.
- 3rd St./SR-60 SBR
- Blaine St./SR-60 NBR
- Blaine St./Iowa Ave.
- Blaine St./Canyon Crest Dr.
- Blaine St./Watkins Dr.
- Linden St./Chicago Ave.
- Linden St./Iowa Ave.
- Linden St./Canyon Crest Dr.
- University Ave./Kansas Ave.
- University Ave./Chicago Ave.
- University Ave./Iowa Ave.
- University Ave./SR-60 SBR
- University Ave./SR-60 NBR
- University Ave./Campus Dr.
- Martin Luther King Blvd./Chicago Ave.
- Martin Luther King Blvd./Iowa Ave.
- Martin Luther King Blvd./Canyon Crest Dr.
- Central Ave./Chicago Ave.
- Central Ave./Canyon Crest Dr.
- Central Ave./Box Springs Blvd.

The 13 existing unsignalized intersections are:

- Big Springs Rd./Watkins Dr.
- Martin Luther King Blvd./SR-60 SBR (1)
- Le Conte Dr./Chicago Ave.
- El Cerrito Dr./Sycamore Canyon Blvd
- Central Ave./SR-60 SBR
- Central Ave./SR-60 NBR
- Linden St./Aberdeen Dr.
- Campus Dr./Aberdeen Dr.
- Big Springs Rd./Campus Dr.
- Parking Lot 1/Campus Dr.
- Campus Dr./Canyon Crest Dr.
- Campus Dr./Citrus Dr.
- Eucalyptus Dr./Campus Dr.



LEGEND

- Study Area Intersections
- Future Study Intersection (New Intersection in future 2015 Condition)

10537-00

FIGURE **4.14-1**

Study Intersection Locations

Not to Scale

Source: Wilbur Smith Associates, 2004

UC Riverside

EIP ASSOCIATES

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 mph speed limit.
- *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 Drive. 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.
- *Iowa Street* —On the UCR campus, Iowa Avenue is a four-lane divided arterial with an 88-foot curb-curb width, a 45 mph speed limit, and bicycle lanes. South of University Avenue, Iowa Street has two lanes, undivided.
- *Martin Luther King Boulevard* —On the UCR campus, Martin Luther King Boulevard is a four-lane divided arterial with an 88-foot curb-curb width, a 50-mph speed limit and bicycle lanes.
- *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 Martin Luther King Boulevard. Canyon Crest becomes a four-lane divided roadway about ½ mile south of Martin Luther King Boulevard.

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 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 Boulevard*—Martin Luther King Boulevard is an east/west roadway extending from Downtown Riverside (as 14th Street) to the UCR campus at Canyon Crest Drive. Martin Luther King Boulevard 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. Martin Luther King Boulevard 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 Martin Luther King Boulevard 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 1 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 Martin Luther King Boulevard 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 Martin Luther King Boulevard, 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 divides the campus in half. The freeway has three mixed-flow and one HOV lane in each direction at this point, with a major interchange at University Avenue. It is currently undergoing construction to widen and improve Canyon Crest underpass and install a full interchange at Marin Luther King Boulevard.
- *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 HOV lanes west of the downtown area. SR-91 has a major interchange at University Avenue.

Existing Traffic Conditions

Existing traffic conditions in the project area were outlined in terms of lane geometry, traffic control, and traffic volumes at the project intersections. Traffic volumes were collected for the A.M. and P.M. peak hours at all study intersections in May and June of 2001 and re-verified in June 2003. Following the compilation of lane geometrics and volumes, the levels of service (LOS) were calculated at each intersection.

Levels of Service

The Level of Service (LOS) concept quantitatively characterizes traffic conditions associated with varying levels of traffic. An LOS determination is a measure of congestion, which is the principal measure of roadway service. These range from LOS A, which indicates a free-flow condition, to LOS F, which indicates a jammed condition. LOS A, B, and C are generally considered satisfactory service levels while LOS D is marginally acceptable, LOS E is undesirable, and LOS F conditions are unacceptable. LOS definitions for signalized and unsignalized intersections are provided in Table 4.14-1 and Table 4.14-2, respectively.

Table 4.14-1 Level of Service—Signalized Intersections

LOS	*Delay Range (sec/veh)*	*Description of Traffic Conditions*
A	0 to 10.0	Insignificant Delays
B	10.1 to 20.0	Minimal Delays
C	20.1 to 35.0	Acceptable Delays
D	35.1 to 55.0	Tolerable Delays
E	55.1 to 80.0	Significant Delays
F	>80.0	Excessive Delays

Source: Wilbur Smith Associates 2003

Table 4.14-2 Level of Service—Unsignalized Intersections

Level of Service	*Delay Range(sec/veh)*	*Description of Traffic Conditions*
A	0 to 10.0	Insignificant Delays
B	10.1 to 15.0	Minimal Delays
C	15.1 to 25.0	Acceptable Delays
D	25.1 to 35.0	Tolerable Delays
E	35.1 to 50.0	Significant Delays
F	>50.0	Excessive Delays

Source: Wilbur Smith Associates 2003

The resultant existing A.M. and P.M. peak hour LOS are summarized in Table 4.14-3 and Table 4.14-4. Table 4.14-3 presents the LOS of the signalized intersections, while Table 4.14-4 presents the LOS of the unsignalized intersections. As shown, all locations operate at LOS D or better in both the A.M. and P.M. peak hours, except the following:

- Signalized Intersections
  - The intersection of Central Avenue/Canyon Crest Drive operates at LOS F in the P.M. peak hour
  - The intersection of Central Avenue/Sycamore Canyon Boulevard operates at LOS E in the P.M. peak hour

Table 4.14-3 Signalized Intersection Levels of Service—Existing Conditions

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Third Street/Kansas Avenue	B	11.7	B	13.5
Third Street/Chicago Avenue	C	33.5	C	29.4
Third Street/SR-60 SBR	C	20.1	B	15.4
Third Street/SR-60 NBR	B	14.8	B	19.7
Blaine Street/Iowa Avenue	D	43.5	D	45.2
Blaine Street/Canyon Crest Drive	B	16.6	D	35.4
Blaine Street/Watkins Drive	C	30.6	D	40.4
Linden Street/Chicago Avenue	B	13.4	A	8.6
Linden Street/Iowa Avenue	B	17.8	B	16.6
Linden Street/Canyon Crest Drive	C	30.1	D	36.7
University Avenue/Kansas Avenue	A	7.8	B	12.4
University Avenue/Chicago Avenue	C	22.8	C	34.0
University Avenue/Iowa Avenue	C	25.9	D	36.1
University Avenue/SR-60 SBR	B	14.1	B	13.9
University Avenue/SR-60 NBR	D	46.4	B	15.2
University Avenue/Campus Drive	B	14.0	B	17.9
Martin Luther King Boulevard/Chicago Avenue	C	33.3	D	39.6
Martin Luther King Boulevard/Iowa Avenue	B	16.2	B	18.5
Martin Luther King Boulevard/Canyon Crest Drive	D	39.1	D	50.1
Central Avenue/Chicago Avenue	C	21.7	D	43.1
Central Avenue/Canyon Crest Drive	D	38.3	**F**	**88.5**
Central Avenue/Box Springs Boulevard	C	30.2	**E**	**75.0**

Source: UC Riverside LRDP Traffic Impact Study 2004

- Unsignalized Intersections
  - The intersection of Big Springs Road/Watkins Drive operates at LOS F in the P.M. peak hour
  - The intersection of El Cerrito Drive/Sycamore Canyon Boulevard operates at LOS F in the A.M. and P.M. peak hours

The following individual movements at their respective minor-stop controlled intersections also experience LOS E or F. It should be noted that the entire intersection delay is typically much lower than presented for the individual movement since the major movements are not required to stop, and therefore are not subject to delays:

- The southbound approach of the Martin Luther King Boulevard/I-215 Southbound Ramp intersection operates at LOS F in the A.M. peak hour. The southbound approach consists of vehicles exiting the I-215 Freeway.

Table 4.14-4 Unsignalized Intersection Levels of Service—Existing Conditions

Intersections	Control	A.M. Peak Hour		P.M. Peak Hour	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
Big Springs Road/Watkins Drive	AWS [a]	D	27.8	**F**	**>50.0**
El Cerrito Drive/Sycamore Canyon	AWS	**F**	**>50.0**	**F**	**>50.0**
Linden Street/Aberdeen Drive	AWS	B	12.9	C	17.2
Campus Drive/Aberdeen Drive	AWS	B	11.9	B	14.2
Big Springs Road/Campus Drive	AWS	A	9.3	B	12.1
Parking Access/Campus Drive	AWS	C	16.3	D	29.6
Campus Drive/Canyon Crest Drive	AWS	B	14.4	B	13.7
Martin Luther King Boulevard/I-215 SBR	Minor	**SB [b]: F**	**>50.0**	SB: C	16.0
Le Conte Drive/Chicago Avenue	Minor	WB [c]: D	30.4	WB: C	22.0
Central Avenue/I-215 SBR	Minor	SB: C	23.4	SB: C	15.8
Central Avenue/I-215 NBR	Minor	NB [d]: C	21.9	**NB: F**	**>50.0**
Campus Drive/Citrus Drive	Minor	SB: A	9.8	SB: B	11.4
Eucalyptus Drive/Campus Drive	Minor	EB [e]: B	11.2	EB: B	14.2

Source: UC Riverside LRDP Traffic Impact Study 2003

[a] AWS = All Way Stop [b] SB = Southbound [c] WB = Westbound [d] NB = Northbound [e] EB = Eastbound

- The northbound approach of the Central Avenue/I-215 Northbound Ramp intersection operates at LOS F in the P.M. peak hour; the northbound approach consists of vehicles exiting the I-215 Freeway.

Existing Freeway Conditions

Existing freeway segment conditions were outlined in the project area. The existing freeway segment levels of service in the project area are shown in Table 4.14-5.

Table 4.14-5 Existing Freeway Segment LOS

Freeway Segment	Peak Hour	Existing		
		Volume	LOS	Delay (sec/veh)
I-215 NB, s/o 60	AM	4425	F0	1.14
	PM	3160	D	0.82
I-215 SB s/o 60	AM	2475	B	0.43
	PM	3740	C	0.65
I-215 NB, b/w 60 & Central	AM	9826	F3	1.69
	PM	6891	F0	1.19
I-215 SB, b/w 60 & Central	AM	5774	C	0.75
	PM	8709	F0	1.13
I-215 NB, b/w Central & MLK	AM	9511	F3	1.64
	PM	6670	F0	1.15
I-215 SB, b/w Central & MLK	AM	5589	C	0.72

Table 4.14-5 Existing Freeway Segment LOS

Freeway Segment	*Peak Hour*	*Existing*		
		Volume	*LOS*	*Delay (sec/veh)*
	PM	8430	F0	1.09
I-215 NB, b/w MLK & University	AM	9134	F3	1.58
	PM	6405	F0	1.10
I-215 SB, b/w MLK & University	AM	5366	C	0.69
	PM	8095	F0	1.05
I-215 NB, b/w University & 3rd	AM	9071	F2	1.36
	PM	6360	D	0.81
I-215 SB, b/w University & 3rd	AM	5329	D	0.80
	PM	8040	F0	1.03
I-215 NB, b/w 3rd & Spruce	AM	9260	F0	1.11
	PM	6493	C	0.66
I-215 SB, b/w 3rd & Spruce	AM	5440	D	0.82
	PM	8207	F0	1.05
I-215 NB, b/w Spruce & 91/60	AM	9197	F2	1.38
	PM	6449	D	0.82
I-215 SB, b/w Spruce & 91/60	AM	5403	D	0.81
	PM	8151	F0	1.04
I-215 NB, n/o 91/60	AM	7132	F0	1.21
	PM	5602	E	0.95
I-215 SB, n/o 91/60	AM	5268	D	0.90
	PM	6798	F0	1.16
60 EB, e/o 215	AM	5845	F3	1.50
	PM	3227	D	0.83
60 WB, e/o 215	AM	4055	F0	1.04
	PM	6673	F3	1.72
60 EB, w/o 91/215Dr.	AM	3595	B	0.46
	PM	5679	C	0.73
60 WB, w/o 91/215	AM	5905	C	0.75
	PM	3821	B	0.49
91 EB, w/o 215/60	AM	5946	F0	1.01
	PM	6671	F0	1.14
91 WB, w/o 215/60	AM	6454	F0	1.10
	PM	5729	E	0.98

Source: UC Riverside LRDP Traffic Impact Study 2004

As presented in Table 4.14-5, the majority of I-215, within the project vicinity, operates at LOS E or worse during both the A.M. and P.M. peak hours, in the peak direction of travel (A.M.-northbound/P.M.-southbound). West of the I-215/SR-91 Interchange, Highway 60 operates at acceptable service levels,

based on volume-to-capacity (v/c) ratio thresholds. Occasional congestion at this location could be due to weaving associated with the interchange. State Route 91, west of the I-215/Hwy 60 Interchange operates at LOS E or worse in both the A.M. and P.M. peak hours, eastbound and westbound. The locations operating at LOS E or worse are described below:

- Interstate 215
  - South of Highway 60, the roadway segment operates unacceptably (LOS E or worse) in the northbound direction during the A.M. peak hour.
  - Between Highway 60 and Central Avenue, the roadway segment operates unacceptably in the northbound direction during the A.M. and P.M. peak hours. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
  - Between Central Avenue and Martin Luther King Boulevard, the roadway segment operates unacceptably in the northbound direction during the A.M. and P.M. peak hours. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
  - Between Martin Luther King Boulevard and University Avenue, the roadway segment operates unacceptably in the northbound direction during the A.M. and P.M. peak hours. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
  - Between University Avenue and 3rd Street, the roadway segment operates unacceptably in the northbound direction during the A.M. peak hour. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
  - Between 3rd Street and Spruce Street, the roadway segment operates unacceptably in the northbound direction during the A.M. peak hour. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
  - Between Spruce Street and the SR-91/Hwy 60 interchange, the roadway segment operates unacceptably in the northbound direction during the A.M. peak hour. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
  - North of the SR-91/Hwy 60 interchange, the roadway segment operates unacceptably in the northbound direction during the A.M. and P.M. peak hours. The segment operates unacceptably in the southbound direction during the P.M. peak hour.
- Highway 60
  - East of Interstate 215, the roadway segment operates unacceptably in the eastbound direction during the A.M. peak hour. The segment operates unacceptably in the westbound direction during the A.M. and P.M. peak hours.
- State Route 91
  - West of the I-215/Hwy 60 interchange, the roadway segment operates unacceptably in the eastbound direction during the A.M. and P.M. peak hours. The segment operates unacceptably in the westbound direction during the A.M. and P.M. peak hours.

Alternative Transportation

UCR has implemented an Alternative Transportation program that facilitates and promotes the use of transit, carpools, vanpools, and bicycling. This program is also referred to as a TDM program. The goal

of 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. Programs and services are available to UCR faculty, staff, and students.

SCAQMD requires a survey of all campus employees to determine Average Vehicle Ridership[25] (AVR). UC Riverside attained an AVR of 1.52 in 2002, which exceeds the 1.5 AVR goal. The outcome represents a gain of 0.21 from the 1.31 AVR attained in 2001. This increase was potentially achieved in part through the improved survey response rate, which increased 9 percent over 2001. In addition, the survey was completed in the spring, which provided more representative data than the fall 2001 survey, due to the unique commute patterns of the University population.

The specific components of the Alternative Transportation program may change over time as the campus strives for the most cost-effective manner by which to continue to achieve its required goals, so long as the overall effectiveness of the Program is not compromised. A description of various components of the current TDM program is provided below.

Alternative Transportation Smart Card

UCR offers the Alternative Transportation Smart Card (AT Card) to those participating in alternative transportation programs. This card is available to bikers, walkers, non-permit holding members of a carpool, vanpool, commuters who use RTA or Metrolink as their main mode of transportation, participants in the drop-off program. The AT Card contains the dollar equivalent of the free parking allotment; participants are allotted a maximum of 48 full days parking usage per fiscal year. Participants use the AT Card to purchase a parking permit on days they drive to campus. Participants in the biking and walking program can also purchase a night permit and remain eligible for the AT program incentives. This option is particularly beneficial for the person that bikes/walks to campus during the day and finds they must regularly return at night.

Carpool Matching

Carpool matching is performed by the Employee Transportation Coordinator, who organizes carpool and vanpool formation meetings on a quarterly basis. In addition, UCR's Transportation and Parking Services (TAPS) website, and information kiosks provide an explanation of carpooling options, including an explanation of the convenience and money-saving options of carpool parking permits. UCR participates in *Advantage Rideshare* and *Option Rideshare*, programs offered by Riverside County and San Bernardino County. These programs offer an incentive to commuters new to ridesharing during the first 90 days of participation. In year 2000, there were a total of 350 carpools at UCR.

Vanpool

All faculty, staff, and graduate students who commute to campus are eligible to participate in the UCR Vanpool Program. There are currently five vanpools that provide transportation to campus Monday through Friday. Vanpools arrive from Menifee, Orange County, Redlands, and Murrieta. UCR vanpools

[25] The AVR is the ratio of employees arriving between 6 A.M. and 10 A.M. to the motor vehicles they drive to campus.

do not run on weekends or campus holidays. Vanpool riders are also eligible to participate in the Guaranteed Ride Home program, a valuable benefit in emergency situations.

Guaranteed Ride Home

To further support the campus carpooling and vanpooling efforts, TAPS has a "Guaranteed Ride Home" program that provides a vehicle for emergency lease to full-time vanpool and carpool participants who must get home during the day for a family emergency or who have to work late. This service is provided to participants once a quarter without charge.

Drop-Off Program

The campus recognizes the ability for full-time faculty, staff, and graduate students to be dropped off at campus each day, and, therefore, do not require a parking permit. Drop-off participants are distinguished from a carpool participant based on their partner. Drop off program participants have partners that work off campus; they do not park a vehicle on campus.

Bicycles

To support and encourage bicycling to campus safely and comfortably, UCR provides bicycle spaces throughout the campus, as well as access to on-campus shower facilities located in the Physical Education Building. New participants are eligible to receive a full-use membership at the Physical Education Facility for up to two quarters of participation in the bicycle program (quarters must be consecutive). At the end of the two-quarter period, Alternative Transportation will continue to pay for the use of showers and lockers for continuing participants, but not full use of the facility. The campus also participates in the bicycle to work day program to promote bicycle use.

Telecommuting and Alternative Work Schedules

TAPS continues to encourage all campus groups to consider telecommuting and alternative work schedules, including a compressed workweek and flextime schedules. Information about these programs is available through Campus Human Resources and TAPS.

TDM Outreach

TAPS provides a transit information center that makes general transit information available (route maps and schedule information). TAPS publicizes the availability and convenience of alternative transportation modes to the campus through Ridesharing brochures, the Transportation and Parking Services Website (www.parking.ucr.edu/), annual commuter fairs, and presentation and distribution of information at new student and employee orientation sessions. Public transit is also actively promoted through the Riverside Transit Authority route information and schedule brochures available at the TAPS office on campus, as well as on the TAPS Website. The website provides extensive information regarding commuting regularly to campus using public transit, including links to local public transit providers' published schedules and maps and inexpensive ways to travel to off-campus locations, such as the Ontario airport or Metrolink commuter rail stations.

Bus Fare Subsidy Pilot Program

Faculty, staff, and students (undergraduate and graduate) who have not purchased a regular parking permit are eligible to purchase one monthly RTA bus pass at a 50 percent discount from the full price fare. The current discounted price for a monthly RTA bus pass is $17.00. Monthly bus passes are available for purchase at the TAPS office, three days prior to the beginning of the month.

Discounted Metrolink passes are available for faculty and staff members who have not purchased a regular parking permit. Monthly passes and 10-trip tickets can be purchased at TAPS office. Participants receive a 15 percent discount on the face value of the ticket.

Metrolink's College Discount Program offers discounted fares to all students enrolled in a minimum of 12 in-class hours a month, or a minimum of 12 units. Monthly passes or 10-trip tickets for the most frequently requested Riverside routes are available at TAPS.

UCR offers a free Metrolink Shuttle service to faculty and staff members. The shuttle runs from the Downtown Riverside station to campus several times daily. As space permits, the shuttle will also transport students to the Downtown station.

Campus Transit

UCR Campus Shuttle ("Highlander Hauler")

The Highlander Hauler is a free campus shuttle service that provides transportation services to University Extension, University Village, the Riverside Sports Center, Canyon Crest Towne Centre and various apartment complexes near the East Campus. The "Blue Line" serves the eastern campus area and surrounding community, with a stop on East Campus Drive just north of Big Springs Road. The "Gold Line" serves the northern campus area and surrounding community, including a stop at Lot 16 and the Aberdeen/Inverness residence halls. This shuttle service could be extended to the proposed UCR Metrolink station near the University in the vicinity of Spruce Street & Watkins Drive, and could also connect with a possible Sunlink stop near the University within the Palm Springs area, which would be offered under the same conditions as the Metrolink shuttle to the downtown station.

The Blue Line operates on half-hour headways from 7:00 A.M. until 5:00 P.M., Monday through Friday, while the Gold Line operates from 7:00 A.M. until 5:30 P.M. on 15-minute headways. Both the Blue Line and Gold Line are one-way loops over the majority of their respective routes.

UCR Metrolink Transport

UCR Metrolink Transport provides a connection from the UCR campus to the Downtown Metrolink Station. The inbound service departs the Metrolink station at 8:05 A.M., and the outbound service departs the UCR campus at 2:35 P.M. and 5:35 P.M., Monday through Friday. The shuttle van makes the following stops on campus:

- Eucalyptus & Citrus
- Bus Stop & Sproul Hall

- Bus Stop across from Bannockburn

UCR Tram Service

The UCR tram traverses Parking Lot 13 on the east side of the East Campus from 9:00 A.M. to 11:00 P.M., Monday through Friday.

Public Transit

Orange Blossom Express Trolley

The Orange Blossom Express Trolley provides service from UCR to downtown Riverside. Half-hourly shuttle service begins at 6:00 P.M. Friday outbound to Marketplace and ends at 11:30 P.M. inbound to UCR. The service also runs on Saturdays beginning at 11:15 A.M. and ending at 10:07 P.M.

Riverside Transit Authority (RTA) Route 1

RTA Route 1 provides service between UCR (at the corner of Canyon Crest Drive and Linden Street) to Corona on half-hour headways with service beginning at 5:46 A.M. outbound and ending at 8:26 P.M. inbound to UCR.

RTA Route 13

RTA Route 13 traverses the UCR campus on Linden Street, Aberdeen Drive, North Campus Drive, and Big Springs Road, and provides service to downtown Riverside and the Tyler Galleria. This route runs on hourly headways with service beginning at 6:15 A.M. outbound to Downtown and ending at 8:45 P.M. inbound to UCR

RTA Route 16

RTA Route 16 traverses the UCR campus on Campus Drive, Aberdeen Drive, Linden Street, and Canyon Crest Drive, providing service between downtown UCR and the Moreno Valley. Service begins at 5:27 A.M. from UCR outbound to Downtown and 6:00 A.M. inbound to UCR from the Downtown Terminal. Buses run on half-hour headways until 9:30 P.M. outbound and 8:50 P.M. inbound to UCR.

Sunlink (via connection w/UCR Metrolink Transport)

Sunlink provides express bus service between Downtown Riverside (RTA transfer terminal and Metrolink station) and the Coachella Valley (Palm Springs). A connection to UCR is provided by the UCR Metrolink Transport. The service runs from Downtown Riverside to Palm Springs departing approximately every three hours beginning at 8:30 A.M. until 5:25 P.M. The return trip departs Palm Desert approximately every 2½ hours beginning at 5:45 A.M. with the last departure at 2:50 P.M.

Metrolink

Currently, Metrolink provides service to Orange County and Los Angeles via three routes. A UCR connection to the downtown Metrolink station is provided by UCR Metrolink Transport. (A service

upgrade, including a station on the north side of the UCR campus, has been proposed in conjunction with the extension of Metrolink service to the City of Perris.)

On the Inland Empire-Orange County line there are currently six departures from Riverside to Orange County with the first train at 5:45 A.M. and the last at 3:33 P.M. From Orange County to Riverside there are six trains, with the first arriving in Riverside at 10:25 A.M. and the last at 7:22 P.M.

The Riverside to Los Angeles line via Ontario has six daily departures from Riverside, with the first at 4:45 A.M. and the last at 3:07 P.M. The return schedule also has six daily trains with the first arriving in Riverside at 2:43 P.M. and the last at 8:02 P.M.

Metrolink currently operates one through train from Riverside to Los Angeles via Fullerton, departing Riverside at 5:55 P.M. The Los Angeles to Riverside via Fullerton trains arrive in Riverside at 7:17 A.M. and 8:03 A.M. Additional service between Riverside, Fullerton, and Los Angeles is available via a connection in Orange.

Pedestrian and Bicycle Routes

Bicycles are permitted on all campus access roadways and pedestrian walkways. Separate bicycle lanes are provided on some campus and city roadways including Linden Street, Aberdeen Drive, Canyon Crest Drive, Big Springs Road, and Valencia Hill Drive. Campus bicycle lanes connect to bicycle lanes on City streets such as University Avenue, Martin Luther King Boulevard, Watkins Drive between Blaine Street and Valencia Hill Drive, and Big Springs Road between Valencia Hill Drive and Watkins Drive.

Parking Supply and Demand

The University currently provides more than 8,800 on-campus parking spaces located in more than 30 parking lots and other smaller areas (e.g., loading docks) throughout the campus. Table 4.14-6 (UCR Existing Parking Supply by Parking Type) summarizes the existing parking supply by parking type. Table 4.14-7 (Existing Parking Spaces by Lot) shows a detailed inventory of existing parking spaces by lot as of March 2001.

Table 4.14-6 UCR Existing Parking Supply by Parking Type

Parking Type	*Spaces*
Commuter	6,217
Residential	1,642
Visitor	626
UC vehicles / Dept. vehicles	40
Disabled/Special Permit	307
Total parking	***8,832***

Source: UCR Transportation and Parking Services, November 2002

Note: This table does not include all special permit parking.

Table 4.14-7 Existing Parking Spaces by Lot

Facility	*Inventory*
Lot 1	349
Lot 2	141
Lot 3	44
Lot 4	87
Lot 5	110
Lot 6	760
Lot 7	42
Lot 8	55
Lot 9	142
Lot 10	68
Lot 11	78
Lot 12	78
Lot 13	592
Lot 14	486
Lot 15	135
Lot 19	228
Lot 21	427
Lot 22	339
Lot 23	103
Lot 24	352
Lot 25	78
Lot 30	2,092
Lot 31	51
Bannockburn	206
Child Dev. Ctr.	54
Highlander Hall	129
University Plaza	105
University Village	49
Watkins House	19
Misc. Lots	972
Loading Docks	100
Total	***8,471***

Source: UCR Transportation and Parking Services, November 2002

Use of commuter parking spaces is controlled via color-coded permits. Red lots are strictly for faculty/staff use only. Blue lots are available to faculty/staff/graduate students. Yellow lots are generally for students. Some blue permits are distributed among undergraduate students on a lottery basis. Faculty, staff, and students are allowed to purchase only one permit (except for Canyon Crest Family Housing and Stonehaven residents).

Visitor parking (which is available for purchase from ticket machines) is primarily provided at the following lots:

- Lot V2 on West Campus Drive—141 spaces
- Lot V10 on Big Springs Road—68 spaces

Forty-six spaces are scattered throughout the campus in other lots or special areas. It has been noted that a portion of visitor parking spaces are occupied by students who prefer to purchase a daily permit.

Trip Generation

Based on cordon counts, vehicles entering and exiting specific parking lots (including residential lots) and selected campus entrances, per person trip generation rates for specific campus population groups, were calculated as shown in Table 4.14-8.

Using the trip generation rates in Table 4.14-8, current daily vehicle trip generation by the UCR campus can be estimated, as shown in Table 4.14-9. Note that this table uses population numbers that reflect year 2002/03 enrollment and employment, based on the available survey data for the traffic analysis.

Table 4.14-8 Current Vehicle Trip Generation Rates

	AM Peak Hour	*PM Peak Hour*	*Daily*
Commuters			
Students	0.080	0.068	1.108
Faculty/Staff	0.490	0.717	7.277
Resident Students			
Married/Family Housing	0.694	0.725	9.153
Residence Hall Housing	0.047	0.120	2.153
On-Campus Apartments	0.088	0.224	4.004

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

All rates are per person, except for Family Student Housing, which reflect trips per unit.

No individual trip generation rate has been calculated for visitors, as use of those spaces is not controlled. Rates for other population categories reflect total campus trip generation and therefore include trips by other individuals, including campus visitors, vendors, and construction workers.

Table 4.14-9 Current UCR Vehicle Trip Generation Per Day		
	People	***Daily Trips***
Commuter		
Faculty/Staff	3,537	25,739
Students	10,186	11,286
Subtotal	*13,723*	*37,025*
Residents		
Married/Family Housing	268	2,453
Residence Hall Housing	2,366	5,094
On-Campus Apartments	615	2,462
Subtotal	*3,249*	*10,009*
Total	***16,972****	***47,034***

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

* It should be noted that the population number of 16,972 reflects 2000/01 enrollment and employment at UCR, which was used in the traffic study. As such, this does not correspond to the Campus 2001/02 baseline population of 17,641 that is used throughout this EIR. Thus, the total amount of daily trips during the 2001/02 academic year would be greater than 47,034.

4.14.3 Regulatory Framework

Federal and State

There are no federal or State transportation regulations applicable to the 2005 LRDP.

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 will be the responsibility of the local agency where the deficiency is located. Other agencies identified as contributors to the deficiency will also be 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.

The Riverside County Draft General Plan 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 includes goals aimed at maintaining an effective transportation system throughout the City. A number of policies have been identified in support of furthering each of these goals. Transportation Element Goals that are relevant to the campus are as follows:

Goal T 1 To build and maintain a transportation system which combines a mix of transportation modes and transportation system management techniques, and which 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.

Goal T 2 To provide adequate, affordable, equitably distributed and energy efficient public transportation for the citizens of Riverside.

Goal T4 To provide a safe, integrated system of bicycle and pedestrian paths throughout the Riverside General Plan Area.

4.14.4 Impacts and Mitigation Measures

Methodology

As a conceptual land use plan, the LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects, or the location of those projects. This Section serves to estimate the potential for implementation of the 2005 LRDP to cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system, or exceed a level of service standard established by the county congestion management agency for designated roads or highways. The impact of projected increases in campus population and parking supply were evaluated to determine the potential effect of those changes on campus trip generation and the subsequent assignment of those trips to the street and highway network in the vicinity of the UCR campus. To evaluate the potential for the 2005 LRDP to substantially increase traffic hazards due to a design features or incompatible uses or to result in inadequate emergency access, the proposed circulation plan in the 2005 LRDP and the Planning Strategies were reviewed. The potential for the LRDP to result in inadequate parking capacity was evaluated based on the existing and proposed parking supply on the UCR campus. To evaluate whether the 2005 LRDP would conflict with applicable policies, plans, or programs supporting alternative transportation, LRDP Planning Strategies were evaluated for consistency with applicable policies, plans, or programs.

Traffic conditions for both the A.M. and P.M. peak hours[26] at the study intersections were evaluated using the Transportation Research Board's 2000 Highway Capacity Manual (HCM) methodology using Synchro software. With this methodology, a level of service is assigned based on average vehicle delay experienced at the intersection. It should be noted that the 2000 HCM methodology does not provide an

[26] The AM Peak hour is the period between 7:45-8:45 AM and the PM Peak Hour is the period between 4:45-5:45 PM.

intersection wide delay and LOS value for minor approach stop controlled intersections. Only the minor approach is assigned an LOS since the major approach is unimpeded.

Background Traffic Growth

To estimate the effect of future campus-related traffic on the local street and highway network, regional traffic growth (or background traffic) was estimated, based on SCAG Model Socio-Economic Data (SED) for the traffic analysis zones (TAZ) in the vicinity of the campus. Based on regional growth estimates for population, housing, and employment, areawide growth in traffic volumes between 2001 and 2015 was estimated at approximately 31.7 percent, or an equivalent annual growth rate of 1.7 percent per year. This corresponds to a growth factor of 1.266. Thus existing traffic volumes at off-campus locations were increased by a factor of 1.266 to account for projected off-campus growth over the LRDP planning horizon and estimate future background traffic volumes.

Future Highway Network Modifications

In addition to increases in traffic volumes from regional growth, changes in the local street and highway network will affect future traffic conditions. These include a major freeway widening and interchange redesign on the I-215/SR-60 and SR-91 freeways that has or will affect the roadway network and traffic conditions in the vicinity of the study area. Based upon information provided by Caltrans to Wilbur Smith Associates in 2002, this project has the following features:

- The project will increase the number of lanes on all three routes as well as reconstruct the 60/91/215 freeway-to-freeway interchanges.
- Construction will begin in fall 2003 and be complete in fall 2006.
- HOV (carpool) lanes will be added in both directions between University Avenue and Box Springs Road.
- A new interchange will be constructed at Martin Luther King Boulevard between Canyon Crest Drive and El Cerrito Drive.
- On I-215, the El Cerrito Drive interchange and existing ramps at Spruce Street will be permanently closed.
- Seven existing interchanges will be reconstructed or reconfigured: On I-215, Blaine Street, University Avenue, Central Avenue, and Box Springs Road will be modified (either ramp widening or reconfigure the interchange design).
- Nineteen bridges will be widened, five bridges reconstructed, and four new bridges will be built including two direct freeway-to-freeway connectors (SB I-215 to EB SR-60 and WB I-215 to SB SR-91) that are more than a mile long each.
- Reconstructed bridges include Spruce Street overcrossing on SR-91 and Blaine Street, Iowa Avenue, Linden Street and Box Springs Road overcrossings on I-215.
- A separate truck bypass ramp will be constructed on SB I-215 through the Box Springs Grade area. The truck bypass ramp will be exclusively for slow-moving trucks separating them from vehicular traffic going up the grade.

- Five existing freeway bridges will be widened to include University Avenue undercrossing, Canyon Crest Drive undercrossing, Box Springs Road overhead, I-215/SR-60 separation, and Day Street undercrossing.

The permanent closure of the El Cerrito Drive interchange and the construction of a new interchange at Martin Luther King Boulevard will redistribute traffic in the vicinity of these interchanges. Based on existing turning movements at the affected ramp intersections, existing traffic was manually reassigned to the new roadway network configuration. Existing traffic using El Cerrito Drive interchange was rerouted to either the new Martin Luther King Boulevard interchange or the existing Central Avenue interchange, based on the most logical route that travelers are expected to make.

Future Traffic Conditions

As a new signalized ramp intersection would be constructed at Martin Luther King Boulevard and NB Ramps due to the SR-92/SR-60/I-215 Project, future traffic conditions must be analyzed for the existing 35 study intersections in the project area along with this new intersection, for a total of 36 study intersections. Figure 4.14-1 illustrates the location of the 35 existing study intersections and the one new intersection, for a total of 36 study intersections, that will be analyzed in this EIR for future traffic conditions. The 23 signalized study intersections are:

- 3rd St./Kansas Ave.
- 3rd St./Chicago Ave.
- 3rd St./I-215 SBR
- Blaine St./I-215 NBR
- Blaine St./Iowa Ave.
- Blaine St./Canyon Crest Dr.
- Blaine St./Watkins Dr.
- Linden St./Chicago Ave.
- Linden St./Iowa Ave.
- Linden St./Canyon Crest Dr.
- University Ave./Kansas Ave.
- University Ave./Chicago Ave.
- University Ave./Iowa Ave.
- University Ave./I-215 SBR
- University Ave./I-215 NBR
- University Ave./Campus Dr.
- Martin Luther King Blvd./Chicago Ave.
- Martin Luther King Blvd./Iowa Ave.
- Martin Luther King Blvd./Canyon Crest Dr.
- Martin Luther King Blvd./I-215 SBR
- Martin Luther King Blvd./I-215 NBR
- Central Ave./Chicago Ave.
- Central Ave./Canyon Crest Dr.
- Central Ave./Box Springs Blvd.

It should be noted that the signalized intersections of Martin Luther King Blvd./I-215 SBR and Martin Luther King Blvd./I-215 NBR shown above are only present in the future 2015 condition. While the Martin Luther King Blvd./I-215 NBR intersection will occur in the future, the Martin Luther King Blvd./I-215 SBR intersection currently exists as an unsignalized intersection.

The 13 unsignalized study intersections are:

1. Big Springs Rd./Watkins Dr.
2. El Cerrito Dr./Sycamore Canyon Blvd.
3. Linden St./Aberdeen Dr.
4. Campus Dr./Aberdeen Dr.
5. Big Springs Rd./Campus Dr.
6. Parking Lot 1/Campus Dr.
7. Campus Dr./Canyon Crest Dr.
8. Le Conte Dr./Chicago Ave.
9. Central Ave./I-215 SBR
10. Central Ave./I-215 NBR
11. Campus Dr./Citrus Dr.
12. Eucalyptus Dr./Campus Dr.
13. Martin Luther King Blvd./I-215 SBR

The intersection of Martin Luther King Blvd./I-215 SBR is listed above because it is currently an unsignalized intersection. This intersection will eventually become a signalized intersection in the future 2015 condition.

Based on the projected areawide increases in traffic volumes and the changes in the highway network described above, future traffic conditions in 2015 without the LRDP project were estimated for the 36 study intersections. Level of service analysis was conducted for two possible configurations of Iowa Avenue, between University Avenue and Martin Luther King Boulevard. The first scenario assumes that this segment of Iowa Avenue remains a two-lane roadway and the second scenario assumes an alternative four-lane cross section. The future traffic conditions at the 36 study intersections under the first scenario for Iowa Avenue are shown in Table 4.14-10 for signalized intersections and Table 4.14-11 for unsignalized intersections. The future traffic conditions under the second scenario for Iowa Avenue are shown in Table 4.14-13 for signalized intersections and Table 4.14-14 for unsignalized intersections. Intersections that would exceed LOS "D" are highlighted with **bold** text in all tables.

Table 4.14-10 Future (without LRDP) Traffic Conditions Signalized Intersections With Existing 2-Lane Iowa Avenue Section

Intersection	*Peak Hour*	*2015 Background*	
		LOS	*Delay (sec/veh)*
3rst St./Kansas Ave.	AM	C	21.5
	PM	C	26.2
3rd St./Chicago Ave.	AM	D	39.5
	PM	D	45.5
3rd St./I-215 SBR	AM	C	24.0
(Blaine Street)	PM	C	21.6
3rd St./I-215 NBR	AM	C	20.5
(Blaine Street)	PM	C	22.3
Blaine St./Iowa Ave.	AM	D	42.7
	PM	**E**	**60.1**
Blaine St./Canyon Crest Dr.	AM	C	22.0
	PM	C	34.6

Table 4.14-10 Future (without LRDP) Traffic Conditions Signalized Intersections With Existing 2-Lane Iowa Avenue Section

Intersection	*Peak Hour*	*2015 Background*	
		LOS	*Delay (sec/veh)*
Blaine St./Watkins Dr.	AM	C	32.7
	PM	D	27.0
Linden St./Chicago Ave.	AM	B	16.8
	PM	B	15.0
Linden St./Iowa Ave.	AM	C	23.3
	PM	C	24.5
Linden St./Canyon Crest Dr.	AM	C	26.0
	PM	C	28.9
University Ave./Kansas Ave.	AM	B	13.1
	PM	C	20.3
University Ave./Chicago Ave.	AM	C	31.6
	PM	**E**	**64.2**
University Ave./Iowa Ave.	AM	D	36.7
	PM	D	51.0
University Ave./I-215 SBR	AM	C	21.0
	PM	C	9.1
University Ave./I-215 NBR	AM	C	29.7
	PM	C	26.6
University Ave./Campus Dr.	AM	B	18.6
	PM	C	23.7
Martin Luther King Blvd./Chicago Ave.	AM	D	46.5
	PM	**E**	**67.0**
Martin Luther King Blvd./Iowa Ave.	AM	B	18.2
	PM	B	16.9
Martin Luther King Blvd./Canyon Crest Dr.	AM	C	31.3
	PM	**F**	**91.8**
Martin Luther King Blvd./I-215 SBR	AM	B	15.7
	PM	C	24.1
Martin Luther King Blvd./I-215 NBR	AM	B	12.7
	PM	B	11.4
Central Ave./Chicago Ave.	AM	C	21.8
	PM	D	43.3
Central Ave./Canyon Crest Dr.	AM	D	37.3
	PM	**E**	**79.4**
Central Ave./Box Springs Blvd.	AM	C	33.1
	PM	**E**	**65.9**

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Assumes existing 2-lane section on Iowa Avenue, between University Avenue and Martin Luther King Boulevard

Table 4.14-11 Future (without LRDP) Traffic Conditions Unsignalized Intersections With Existing 2-Lane Iowa Avenue Section

Intersection	*Control*	*Peak Hour*	*2015 Background*	
			LOS	*Delay (sec/veh)*
Big Springs Rd./Watkins Dr.	AWS	**AM**	**E**	**35.2**
		PM	**F**	**129.6**
El Cerrito Dr./Sycamore Canyon Blvd.	AWS	AM	C	15.2
		PM	B	11.3
Linden St./Aberdeen Dr.	AWS	AM	A	9.8
		PM	B	12.6
Campus Dr./Aberdeen Dr.	AWS	AM	B	10.2
		PM	B	10.8
Big Springs Rd./Campus Dr.	AWS	AM	A	8.7
		PM	B	10.4
Parking Access/Campus Dr.	AWS	AM	B	10.7
		PM	C	15.2
Campus Dr./Canyon Crest Dr.	AWS	AM	B	12.9
		PM	B	13.4
Le Conte Dr./Chicago Ave.	Minor	**AM**	**WB: F**	**70.6**
		PM	WB: D	33.3
Central Ave./I-215 SBR	Minor	AM	SB: C	18.7
		PM	SB: C	20.7
Central Ave./I-215 NBR	Minor	**AM**	**NB: F**	**60.3**
		PM	**NB: F**	**320.0**
Campus Dr./Citrus Dr.	Minor	AM	SB: A	9.5
		PM	SB: B	10.5
Eucalyptus Dr./Campus Dr.	Minor	AM	EB: B	10.3
		PM	EB: B	11.9
	Minor	AM		
		PM		
Martin Luther King Blvd./I-215	* Refer to Table 4.14-10. This intersection will be signalized under future conditions.			

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Assumes existing 2-lane section on Iowa Avenue, between University Avenue and Martin Luther King Boulevard

Two-Lane Iowa Avenue Section Scenario

The 2005 LRDP identifies a two-lane Iowa Avenue (with median and turning lanes) as the preferred scenario because housing is proposed for both sides of Iowa Avenue between Everton Place and MLK. Iowa Avenue should be designed with a narrow cross-section and traffic calming devices to facilitate pedestrian and bicycle crossings within the West Campus. As shown in Table 4.14-10 for signalized intersections and Table 4.14-11 for unsignalized intersections under the two-lane Iowa Avenue scenario

from Everton Place to MLK, projected areawide increases in traffic volumes would degrade LOS conditions to LOS "E" or "F" at nine intersections (six signalized, three non-signalized):

1. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS E in the P.M. peak hour.
2. The signalized intersection of University Avenue/Chicago Avenue would operate at LOS E in the P.M. peak hour.
3. The signalized intersection of Martin Luther King Boulevard/Chicago Avenue would operate at LOS E in the P.M. peak hour.
4. The signalized intersection of Martin Luther King Boulevard/Canyon Crest would operate at LOS F in the P.M. peak hour.
5. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS E in the P.M. peak hour.
6. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
7. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
8. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F in the A.M. peak hour.
9. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

To address the impacts from background traffic growth, the following improvements (shown on Figures 4.14-3(a) through 4.14-3(c)) are identified. These improvements would be up to the discretion of the City of Riverside, as they would be the result of traffic growth associated with projects other than the LRDP. Mitigation measures that would address impacts from the proposed project are identified in subsequent portions of the analysis.

Improvements Needed For Background Traffic Growth Without LRDP:

1. The intersection of Blaine Street/Iowa Avenue would require a separate through and a right-turn lane on the southbound approach to operate at LOS D or better. The approach currently consists of a left-turn lane, one through lane, and one shared through/right-turn lane. The mitigated approach would consist of a left-turn lane, two through lanes, and one right-turn lane.
2. The intersection of University Avenue/Chicago Avenue would require an additional through lane on the southbound approach to operate at LOS D or better. The approach currently consists of two left-turn lanes, one through lane, and one shared through/right-turn lane. The mitigated approach would consist of two left-turn lanes, two through lanes, and one shared through/right-turn lane. In addition, the eastbound right turn movement would require an overlap signal phase.

3. The intersection of Martin Luther King Boulevard/Chicago Avenue would require an additional left-turn lane on the southbound approach, and an additional through lane on the eastbound approach to operate at LOS D or better.
4. The intersection of Martin Luther King Boulevard/Canyon Crest Drive would require an additional right-turn lane on the eastbound approach to operate at LOS D or better.
5. The intersection of Central Avenue/Canyon Crest Drive would require an additional left-turn lane on the southbound approach, and an additional through lane on the eastbound approach to operate at LOS D or better. The eastbound approach currently consists of one left-turn lane, two through lanes, and one right-turn lane. The mitigated eastbound approach would consist of one left-turn lane, two through lanes, and one shared through/right-turn lane.
6. The intersection of Central Avenue/Box Springs Boulevard would require a separate through and a right-turn lane on the eastbound approach to operate at LOS D or better. The approach currently consists of one left-turn lane, one through lane, and one shared through/right-turn lane. The mitigated approach would consist of one left-turn lane, two through lanes, and one right-turn lane.
7. The intersection of Big Springs Road/Watkins Drive would require signalization and would then operate at LOS B or better. In addition, the eastbound and westbound approaches should be restriped to provide an exclusive left-turn lane and a shared through/right-turn lane.
8. The intersection of Le Conte Drive/Chicago Ave would require a separate left turn and right-turn lane on the westbound approach for the approach to operate at LOS D or better.
9. The intersection of Central Avenue/I-215 Northbound Ramp would require signalization and would then operate at LOS C or better.

With implementation of these improvements, traffic conditions at all intersections with anticipated future background without the 2005 LRDP would operate at LOS D or better, as shown in Table 4.14-12. The City has not indicated whether or not the improvements identified above would be implemented and has not committed to these future improvements. In addition, improvements identified as items 1, 2, 3, 4, 5, 6, and 8 above would require acquisition of additional ROW. Before actual construction of roadway improvements and mitigations listed above, steps will need to be undertaken to delineate the extent of right-of-way acquisitions. Preliminary evaluation of the needed acquisition indicates that secondary effects such as removal of parking lots, portions of structures, and property frontage would occur. These secondary effects could impair the functionality of existing commercial uses, and could be financially infeasible. The City of Riverside will need to balance the existing land uses with acquisition of right of way for traffic improvements in order to ensure that City and private property needs are accommodated in an acceptable manner. The City has not undertaken this investigation.

Table 4.14-12 Future Traffic Conditions (Without LRDP) with Mitigation at Selected Intersections (With Two-Lane Iowa Avenue Section)

Intersection	Peak Hour	2015 Background					
		Base			Mitigated		
		Control	LOS	Delay (sec/veh)	Control	LOS	Delay (sec/veh)
Blaine St./Iowa Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	60.1		D	44.4
University Ave./Chicago Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	64.2		D	42.8
Martin Luther King Blvd./Chicago Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	67.0		D	51.2
Martin Luther King Blvd./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		F	91.8		D	48.8
Central Ave./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		E	79.4		D	46.6
Central Ave./Box Springs Blvd.	AM	Signal	—	—	Signal	—	—
	PM		E	65.9		D	45.6
Big Springs Rd./Watkins Dr.	AM	AWS	E	35.2	Signal	A	6.5
	PM		F	129.6		B	15.9
Le Conte Dr./Chicago Ave.	AM	Minor	WB: F	70.6	Minor	WB: D	34.8
	PM		—	—		—	—
Central Ave./I—215 NBR	AM	Minor	NB: F	60.3	Signal	B	18.3
	PM		NB: F	320.0		C	22.1

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Four-Lane Iowa Avenue Section Scenario

Table 4.14-13 and Table 4.14-14 show the future conditions for the signalized intersections and unsignalized intersections, respectively, under four-lane Iowa Avenue scenario. With a four-lane Iowa Avenue assumed between University Avenue and Martin Luther King Boulevard, projected areawide increases in traffic volumes would degrade LOS conditions to LOS "E" or "F" at seven intersections (two less than the two-lane scenario):

1. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS E in the P.M. peak hour.
2. The signalized intersection of Martin Luther King Boulevard/Canyon Crest would operate at LOS F in the P.M. peak hour.
3. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS E in the P.M. peak hour.
4. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.

5. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
6. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F in the A.M. peak hour.
7. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

All of these intersections are also impacted with Iowa Avenue as a two-lane roadway. In addition, while the Chicago Avenue intersections at University Avenue and Martin Luther King Boulevard would not be impacted with Iowa Avenue as a four-lane roadway, it would be impacted with Iowa Avenue as a two-lane roadway.

Table 4.14-13 Future (without LRDP) Traffic Conditions Signalized Intersections With Alternative 4-Lane Iowa Avenue Section

Intersection	*Peak Hour*	*2015 Background*	
		LOS	*Delay (sec/veh)*
3rst St./Kansas Ave.	A.M.	C	21.5
	P.M.	C	26.2
3rd St./Chicago Ave.	A.M.	D	39.2
	P.M.	D	39.0
3rd St./I-215 SBR	A.M.	C	23.9
	P.M.	B	19.7
3rd St./I-215 NBR	A.M.	B	20.0
	P.M.	C	21.8
Blaine St./Iowa Ave.	A.M.	D	43.3
	P.M.	**E**	**56.8**
Blaine St./Canyon Crest Dr.	A.M.	C	22.0
	P.M.	C	34.6
Blaine St./Watkins Dr.	A.M.	C	32.7
	P.M.	C	27.0
Linden St./Chicago Ave.	A.M.	B	16.5
	P.M.	B	12.7
Linden St./Iowa Ave.	A.M.	C	23.3
	P.M.	C	24.2
Linden St./Canyon Crest Dr.	A.M.	C	26.0
	P.M.	C	28.9
University Ave./Kansas Ave.	A.M.	B	13.1
	P.M.	C	20.3
University Ave./Chicago Ave.	A.M.	C	32.5
	P.M.	D	38.5
University Ave./Iowa Ave.	A.M.	D	38.5
	P.M.	D	50.8
University Ave./I-215 SBR	A.M.	C	21.0
	P.M.	A	9.0

Table 4.14-13 Future (without LRDP) Traffic Conditions Signalized Intersections With Alternative 4-Lane Iowa Avenue Section

Intersection	*Peak Hour*	*2015 Background*	
		LOS	*Delay (sec/veh)*
University Ave./I-215 NBR	A.M.	C	28.9
	P.M.	C	26.7
University Ave./Campus Dr.	A.M.	B	18.6
	P.M.	C	23.7
Martin Luther King Blvd./Chicago Ave.	A.M.	D	36.4
	P.M.	D	52.3
Martin Luther King Blvd./Iowa Ave.	A.M.	C	21.3
	P.M.	C	25.2
Martin Luther King Blvd./Canyon Crest Dr.	A.M.	C	34.0
	P.M.	**F**	**104.7**
Martin Luther King Blvd./I-215 SBR	A.M.	B	15.8
	P.M.	B	18.7
Martin Luther King Blvd./I-215 NBR	A.M.	B	10.5
	P.M.	A	7.1
Central Ave./Chicago Ave.	A.M.	C	21.8
	P.M.	D	43.3
Central Ave./Canyon Crest Dr.	A.M.	D	37.3
	P.M.	**E**	**79.4**
Central Ave./Box Springs Blvd.	A.M.	C	33.1
	P.M.	**E**	**65.9**

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Assumes 4-lane section on Iowa Avenue, between University Avenue and Martin Luther King Boulevard

Table 4.14-14 Future (without LRDP) Traffic Conditions Unsignalized Intersections With Alternative 4-Lane Iowa Avenue Section

Intersection	*Control*	*Peak Hour*	*2015 Background*	
			LOS	*Delay (sec/veh)*
Big Springs Rd./Watkins Dr.	AWS	**AM**	**E**	**35.2**
		PM	**F**	**129.6**
El Cerrito Dr./Sycamore Canyon Blvd.	AWS	AM	C	15.2
		PM	B	11.3
Linden St./Aberdeen Dr.	AWS	AM	A	9.8
		PM	B	12.6
Campus Dr./Aberdeen Dr.	AWS	AM	B	10.2
		PM	B	10.8
Big Springs Rd./Campus Dr.	AWS	AM	A	8.7
		PM	B	10.4
Parking Access/Campus Dr.	AWS	AM	B	10.7
		PM	C	15.2
Campus Dr./Canyon Crest Dr.	AWS	AM	B	12.9
		PM	B	13.4

Table 4.14-14 Future (without LRDP) Traffic Conditions Unsignalized Intersections With Alternative 4-Lane Iowa Avenue Section

Intersection	*Control*	*Peak Hour*	*2015 Background*	
			LOS	*Delay (sec/veh)*
Le Conte Dr./Chicago Ave.	Minor	**AM**	**WB: F**	**70.6**
		PM	WB: D	33.3
Central Ave./I-215 SBR	Minor	AM	SB: C	18.7
		PM	SB: C	20.7
Central Ave./I-215 NBR	Minor	**AM**	**NB: F**	**60.3**
		PM	**NB: F**	**320.0**
Campus Dr./Citrus Dr.	Minor	AM	SB: A	9.5
		PM	SB: B	10.5
Eucalyptus Dr./Campus Dr.	Minor	AM	EB: B	10.3
		PM	EB: B	11.9

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Assumes existing 2-lane section on Iowa Avenue, between University Avenue and Martin Luther King Boulevard

To address the impacts from background traffic growth without the LRDP, the following improvements (shown on Figures 4.14-4(a) and 4.14-4(b)) are identified. These improvements would be up to the discretion of the City of Riverside, as they would be the result of traffic growth associated with projects other than the LRDP. Mitigation measures that would address impacts from the proposed project are identified in subsequent portions of the analysis.

1. The intersection of Blaine Street/Iowa Avenue would require a separate through and a right-turn lane on the southbound approach to operate at LOS D or better. The approach currently consists of a left-turn lane, one through lane, and one shared through/right-turn lane. The mitigated approach would consist of a left-turn lane, two through lanes, and one right-turn lane.
2. The intersection of Martin Luther King Boulevard/Canyon Crest Drive would require an additional right-turn lane on the eastbound approach to operate at LOS D or better.
3. The intersection of Central Avenue/Canyon Crest Drive would require an additional left-turn lane and an additional through lane on the eastbound approach to operate at LOS D or better.
4. The intersection of Central Avenue/Box Springs Boulevard would require a separate through and right-turn lane on the eastbound approach to operate at LOS D or better.
5. The intersection of Big Springs Road/Watkins Drive would require signalization and would then operate at LOS B or better. In addition, the eastbound and westbound approaches should be restriped to provide an exclusive left-turn lane and a shared through/right-turn lane.
6. The intersection of Le Conte Drive/Chicago Ave would require a separate left turn and right-turn lane on the westbound approach for the approach to operate at LOS D or better.
7. The intersection of Central Avenue/I-215 Northbound Ramp would require signalization and would then operate at LOS C or better.

With implementation of these improvements, traffic conditions at all intersections with anticipated future background without the 2005 LRDP would operate at LOS D or better, as shown in Table 4.14-15. The City has not indicated whether or not the improvements identified above would be implemented and has not committed to these future improvements. In addition, improvements identified as items 1, 3, 4, and 6 identified above would require acquisition of additional ROW. Before actual construction of roadway improvements and mitigations listed above, steps will need to be undertaken to delineate the extent of right-of-way acquisitions. Preliminary evaluation of the needed acquisition indicates that secondary effects such as removal of parking lots, portions of structures, and property frontage would occur. These secondary effects could impair the functionality of existing commercial uses. The City of Riverside will need balance the existing land uses with acquisition of right of way for traffic improvements in order to ensure that City and private property needs are accommodated in an acceptable manner. The City has not undertaken this investigation.

Future Freeway Segment Analysis

Freeway segment level of service (LOS) analysis was conducted for the study freeway segments (I-215, SR-91, and Highway 60) under the 2015 background traffic (without LRDP project) conditions. Level of service analysis was conducted for two possible configurations of Iowa Avenue, between University Avenue/Everton Place and Martin Luther King Boulevard. The first scenario assumes that this segment of Iowa Avenue remains a two-lane roadway. The level of service summary for the two-lane scenario is shown in Table 4.14-16. The second scenario assumes an alternative four-lane cross section. The level of service summary for the four-lane scenario is presented in Table 4.14-17.

Table 4.14-15 Future Traffic Conditions with Mitigation at Selected Intersections (With Four-Lane Iowa Avenue Section)

		2015 Background					
		Base			*Mitigated*		
Intersection	*Peak Hour*	*Control*	*LOS*	*Delay (sec/veh)*	*Control*	*LOS*	*Delay (sec/veh)*
Blaine St./Iowa Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	56.8		D	45.3
Martin Luther King Blvd./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		F	104.7		D	45.9
Central Ave./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		E	79.4		D	47.0
Central Ave./Box Springs Blvd.	AM	Signal	—	—	Signal	—	—
	PM		E	65.9		D	45.6
Big Springs Rd./Watkins Dr.	AM	AWS	E	35.2	Signal	A	6.5
	PM		F	129.6		B	15.9
Le Conte Dr./Chicago Ave.	AM	Minor	WB: F	70.6	Minor	WB: D	34.8
	PM		—	—		—	—
Central Ave./I—215 NBR	AM	Minor	NB: F	60.3	Signal	B	18.3
	PM		NB: F	320.0		C	22.1

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

As presented in Tables 4.14-15 and 4.14-16, portions of I-215, State Route 91, and Highway 60, within the project vicinity, would continue to operate at LOS E or worse in both the A.M. and P.M. peak hours, northbound and southbound. In both the two-and four-lane Iowa Avenue scenarios, the following sections would operate unacceptably:

- Interstate 215:
  - South of Highway 60, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. peak hour.
  - Between Highway 60 and Central Avenue, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. and P.M. peak hours. The segment would continue to operate unacceptably in the southbound direction during the P.M. peak hour.
  - Between Central Avenue and Martin Luther King Boulevard, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. peak hour. The segment would continue to operate unacceptably in the southbound direction during the P.M. peak hour. A planned carpool and truck passing lane in the section would improve operating conditions for other periods.
  - Between Martin Luther King Boulevard and University Avenue, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. peak hour. A planned carpool lane in the section would improve operating conditions for other periods.
  - Between University Avenue and 3rd Street, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. peak hour. The segment would continue to operate unacceptably in the southbound direction during the P.M. peak hour.
  - Between 3rd Street and Spruce Street, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. peak hour. The segment would continue to operate unacceptably in the southbound direction during the P.M. peak hour.
  - Between Spruce Street and the SR-91/I-215 interchange, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. peak hour. The segment would continue to operate unacceptably in the southbound direction during the P.M. peak hour.
  - North of the SR-91/I-215 interchange, the roadway segment would continue to operate unacceptably in the northbound direction during the A.M. and P.M. peak hours. The segment would continue to operate unacceptably in the southbound direction during the P.M. peak hour.
- Highway 60:
  - East of Interstate 215, the roadway segment would continue to operate unacceptably in the eastbound direction during the A.M. peak hour. The segment would continue to operate unacceptably in the westbound direction during the A.M. and P.M. peak hours.

- State Route 91:
  - West of the I-215/Hwy 60 interchange, the roadway segment would continue to operate unacceptably in the eastbound direction during the A.M. and P.M. peak hours. The segment would continue to operate unacceptably in the westbound direction during the A.M. and P.M. peak hours.

Table 4.14-16 2015 Freeway Segment LOS Summary Without LRDP

Freeway Segment	*Peak Hour*	*2015 Background w/Two-Lane Iowa Section*		
		Volume	*LOS*	*Delay (sec/veh)*
I-215 NB, s/o 60	AM	4721	F0	1.22
	PM	3372	D	0.87
I-215 SB s/o 60	AM	2641	B	0.46
	PM	3991	C	0.69
I-215 NB, b/w 60 & Central	AM	10484	F1	1.36
	PM	7353	E	0.95
I-215 SB, b/w 60 & Central	AM	6161	C	0.64
	PM	9292	E	0.96
I-215 NB, b/w Central & MLK	AM	10148	F1	1.31
	PM	7117	D	0.92
I-215 SB, b/w Central & MLK	AM	5963	B	0.62
	PM	8995	E	0.93
I-215 NB, b/w MLK & University	AM	9829	F1	1.27
	PM	6929	D	0.90
I-215 SB, b/w MLK & University	AM	5725	B	0.59
	PM	8812	D	0.91
I-215 NB, b/w University & 3rd	AM	9721	F3	1.46
	PM	6846	D	0.87
I-215 SB, b/w University & 3rd	AM	5686	D	0.85
	PM	8669	F0	1.11
I-215 NB, b/w 3rd & Spruce	AM	9880	F0	1.19
	PM	6928	C	0.71
I-215 SB, b/w 3rd & Spruce	AM	5804	D	0.87
	PM	8757	F0	1.12
I-215 NB, b/w Spruce & 91/I-215	AM	9813	F3	1.47
	PM	6881	D	0.88
I-215 SB, b/w Spruce & 91/I-215	AM	5765	D	0.86
	PM	8697	F0	1.11
I-215 NB, n/o 91/I-215	AM	7610	F1	1.30
	PM	5977	F0	1.02
I-215 SB, n/o 91/I-215	AM	5621	E	0.96
	PM	7253	F0	1.24

Table 4.14-16 2015 Freeway Segment LOS Summary Without LRDP

Freeway Segment	Peak Hour	2015 Background w/Two-Lane Iowa Section		
		Volume	LOS	Delay (sec/veh)
60 EB, e/o 215	AM	6237	F3	1.60
	PM	3443	D	0.89
60 WB, e/o 215	AM	4327	F0	1.11
	PM	7120	F3	1.83
60 EB, w/o 91/215Dr.	AM	3836	B	0.49
	PM	6059	C	0.77
60 WB, w/o 91/215	AM	6301	D	0.80
	PM	4077	B	0.52
91 EB, w/o 215/60	AM	6344	F0	1.08
	PM	7118	F0	1.21
91 WB, w/o 215/60	AM	6886	F0	1.17
	PM	6113	F0	1.04

Assumes two-lane section of Iowa Avenue, between University Drive and Martin Luther King Boulevard.
Source: UC Riverside LRDP Traffic Impact Study 2004

Table 4.14-17 2015 Freeway Segment LOS Summary Without LRDP with Alternative 4-Lane Iowa Avenue Section

Freeway Segment	Peak Hour	2015 Background		
		Volume	LOS	Delay (sec/veh)
I-215 NB, s/o 60	AM	4721	F0	1.22
	PM	3372	D	0.87
I-215 SB s/o 60	AM	2641	B	0.46
	PM	3991	C	0.69
I-215 NB, b/w 60 & Central	AM	10484	F1	1.36
	PM	7353	E	0.95
I-215 SB, b/w 60 & Central	AM	6161	C	0.64
	PM	9292	E	0.96
I-215 NB, b/w Central & MLK	AM	10148	F1	1.31
	PM	7117	D	0.92
I-215 SB, b/w Central & MLK	AM	5963	B	0.62
	PM	8995	E	0.93
I-215 NB, b/w MLK & University	AM	9746	F1	1.26
	PM	6834	D	0.88
I-215 SB, b/w MLK & University	AM	5725	B	0.59
	PM	8637	D	0.89
I-215 NB, b/w University & 3rd	AM	9679	F2	1.45
	PM	6786	D	0.87
I-215 SB, b/w University & 3rd	AM	5686	D	0.85
	PM	8579	F0	1.10

Table 4.14-17 2015 Freeway Segment LOS Summary Without LRDP with Alternative 4-Lane Iowa Avenue Section

Freeway Segment	*Peak Hour*	*2015 Background*		
		Volume	*LOS*	*Delay (sec/veh)*
I-215 NB, b/w 3rd & Spruce	AM	9880	F0	1.19
	PM	6928	C	0.71
I-215 SB, b/w 3rd & Spruce	AM	5804	D	0.87
	PM	8757	F0	1.12
I-215 NB, b/w Spruce & 91/60	AM	9813	F3	1.47
	PM	6881	D	0.88
I-215 SB, b/w Spruce & 91/60	AM	5765	D	0.86
	PM	8697	F0	1.11
I-215 NB, n/o 91/60	AM	7610	F1	1.30
	PM	5977	F0	1.02
I-215 SB, n/o 91/60	AM	5621	E	0.96
	PM	7253	F0	1.24
60 EB, e/o 215	AM	6237	F3	1.60
	PM	3443	D	0.89
60 WB, e/o 215	AM	4327	F0	1.11
	PM	7120	F3	1.83
60 EB, w/o 91/215Dr.	AM	3836	B	0.49
	PM	6059	C	0.77
60 WB, w/o 91/215	AM	6301	D	0.80
	PM	4077	B	0.52
91 EB, w/o 215/60	AM	6344	F0	1.08
	PM	7118	F0	1.21
91 WB, w/o 215/60	AM	6886	F0	1.17
	PM	6113	F0	1.04

Assumes 4-lane section on Iowa Avenue, between University Avenue and Martin Luther King Blvd.

Source: UC Riverside LRDP Traffic Impact Study 2004

Thresholds of Significance

The project would be considered to have a significant traffic impact if it would result in

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways
- Substantially increase traffic hazards due to a design feature or incompatible uses
- Result in inadequate emergency access
- Result in inadequate parking capacity
- Conflict with applicable policies, plans, or programs supporting alternative transportation

For the purposes of this study, a substantial increase in traffic is defined consistent with City of Riverside criteria, where a significant impact is identified as an increase in the Level of Service above LOS D (e.g., LOS E or F would be unacceptable).

Effects Not Found to Be Significant

Threshold	Would the project 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 implementation of the 2005 LRDP would not result in a change in air traffic patterns or an increase in air traffic levels. No impact to air traffic patterns would occur as a result of the project, and no additional analysis is required in this EIR.

Impacts and Mitigation

Threshold	Would the project cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?

Impact 4.14-1 **Implementation of the 2005 LRDP would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service. Even with implementation of the relevant 2005 LRDP Planning Strategies, Program and Practice, and Mitigation Measures, this impact would be *significant and unavoidable*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities intended to accommodate a student enrollment of 25,000 students. The increase in the campus population would result in a need for an increase in the campus TDM program and parking inventory.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategies 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 of existing campus Programs and Practices (PP) would reduce campus trip generation:

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.)

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus, intended to accommodate an enrollment of 25,000 students, including housing for 50 percent of students in campus-controlled housing. The proposed LRDP parking program would increase the supply of parking to approximately 15,868 spaces, with most of the parking located in structures on the campus perimeter. The increase in the campus population and parking spaces would increase campus trip generation by approximately 53,582 average daily vehicle trips, as shown in Table 4.14-18.

The increase in campus trip generation would increase traffic volumes on the local street network, thus degrading traffic conditions at some intersections. The Traffic Study for the proposed project conducted an analysis of future levels of service at the study intersections upon implementation of the 2005 LRDP for two possible configurations of Iowa Avenue, between University Avenue and Martin Luther King Boulevard. The first scenario assumes that this segment of Iowa Avenue would remain a two-lane roadway, while the second scenario assumed an alternative four-lane cross section. The analysis below identifies impacts to intersections that would occur with the LRDP, without the implementation of

future roadway improvements identified for the City of Riverside under the future without project conditions.

Table 4.14-18 LRDP-Related Increase in UCR Trip Generation

	Existing (2001)			Future (2015)			Net Increase (2001–15)		
Category	AM Peak	PM Peak	Daily	AM Peak	PM Peak	Daily	AM Peak	PM Peak	Daily
Resident Students									
Married / Family Housing	186	194	2,453	496	518	6,535	310	173	4,082
Residence Hall Housing	112	284	5,094	278	709	12,716	166	425	7,622
On-Campus Apartments	54	138	2,462	517	1,317	23,544	463	1,179	21,081
Resident Students Subtotal	*352*	*616*	*10,009*	*1,291*	*2,544*	*42,795*	*939*	*1,927*	*32,785*
TDM Reduction[1]				(94)	(193)	(3,278)	(94)	(193)	(3,278)
Net Adj. Resident Students				1,197	3,351	39,517	845	1,734	29,507
Commuters									
Students	815	693	11,286	1,000	850	13,850	185	157	2,564
Faculty / Staff	1,733	2,536	25,739	3,639	5,324	54,039	1,906	2,788	28,300
Commuter Subtotal	*2,548*	*3,229*	*37,025*	*4,639*	*6,174*	*67,889*	*2,091*	*2,946*	*30,864*
TDM Reduction[1]				(464)	(617)	(6,789)	(464)	(617)	(6,789)
Net Adj. Commuters				4,175	5,557	61,100	1,627	2,329	24,075
Total	**2,900**	**3,845**	**47,034**	**5,372**	**7,908**	**110,617**	**2,472**	**4,063**	**53,582**

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

1. Trip reductions vary based on type of use. Generally, 10% reduction in trips applied for future but not existing trips as a conservative approach. Trip reduction assumed to result from aggressive implementation of Transportation Demand Management measures

Scenario 1: Two-Lane Iowa Avenue

Assuming that Iowa Avenue remains a two-lane roadway south of Everton Place as the preferred UCR scenario, the Traffic Study concludes that 12 study intersections would operate at unacceptable levels of service under the 2015 project traffic conditions. Out of these 12 intersections, nine intersections would be impacted without LRDP traffic. Table 4.14-19 shows the future LOS at the signalized study intersections and Table 4.14-20 shows the future LOS at the unsignalized study intersections. Intersections that would exceed LOS "D" are highlighted with **bold** text.

Table 4.14-19 Future Traffic Conditions at Signalized Intersections Without and With 2005 LRDP (Two-Lane Iowa Avenue Section)

		2015 Background		2015 W/ Project	
Intersection	Peak Hour	LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
3rst St./Kansas Ave.	AM	C	21.5	C	22.4
	PM	C	26.2	C	28.9
3rd St./Chicago Ave.	AM	D	39.5	D	51.9
	PM	D	45.5	**E**	**59.9**
3rd St./I-215 SBR	AM	C	24.0	C	31.3
	PM	C	21.6	C	29.3
3rd St./I-215 NBR	AM	C	20.5	C	25.0
	PM	C	22.3	C	25.5

Table 4.14-19 Future Traffic Conditions at Signalized Intersections Without and With 2005 LRDP (Two-Lane Iowa Avenue Section)

Intersection	*Peak Hour*	*2015 Background*		*2015 W/ Project*	
		LOS	*Delay (sec/veh)*	*LOS*	*Delay (sec/veh)*
Blaine St./Iowa Ave.	AM	D	42.7	D	50.9
	PM	**E**	**60.1**	**F**	**110.3**
Blaine St./Canyon Crest Dr.	AM	C	22.0	C	24.1
	PM	C	34.6	D	53.0
Blaine St./Watkins Dr.	AM	C	32.7	C	34.2
	PM	C	27.0	D	45.4
Linden St./Chicago Ave.	AM	B	16.8	B	18.4
	PM	B	15.0	B	16.3
Linden St./Iowa Ave.	AM	C	23.3	C	21.7
	PM	C	24.5	C	25.5
Linden St./Canyon Crest Dr.	AM	C	26.0	C	26.2
	PM	C	28.9	C	34.1
University Ave./Kansas Ave.	AM	B	13.1	B	14.6
	PM	C	20.3	C	34.1
University Ave./Chicago Ave.	AM	C	31.6	C	32.9
	PM	**E**	**64.2**	**F**	**87.3**
University Ave./Iowa Ave.	AM	D	36.7	D	38.1
	PM	D	51.0	**E**	**70.0**
University Ave./I-215 SBR	AM	C	21.0	C	24.7
	PM	A	9.1	D	43.4
University Ave./I-215 NBR	AM	C	29.7	C	32.4
	PM	C	26.6	D	42.7
University Ave./Campus Dr.	AM	B	18.6	B	11.5
	PM	C	23.7	B	15.1
Martin Luther King Blvd./Chicago Ave.	AM	D	46.5	**E**	**56.3**
	PM	**E**	**67.0**	**F**	**85.9**
Martin Luther King Blvd./Iowa Ave.	AM	B	18.2	C	21.5
	PM	B	16.9	C	20.6
Martin Luther King Blvd./Canyon Crest Dr.	AM	C	31.3	D	53.3
	PM	**F**	**91.8**	**F**	**110.7**
Martin Luther King Blvd./I-215 SBR	AM	B	15.7	C	20.1
	PM	C	24.1	D	46.5
Martin Luther King Blvd./I-215 NBR	AM	B	12.7	B	16.7
	PM	B	11.4	B	15.6
Central Ave./Chicago Ave.	AM	C	21.8	C	21.0
	PM	D	43.3	D	45.9
Central Ave./Canyon Crest Dr.	AM	D	37.3	D	39.8
	PM	**E**	**79.4**	**F**	**88.1**
Central Ave./Box Springs Blvd.	AM	C	33.1	C	33.2
	PM	**E**	**65.9**	**E**	**66.7**

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Table 4.14-20 Future Traffic Conditions at Unsignalized Intersections Without and With 2005 LRDP (Two-Lane Iowa Avenue Section)

Intersection	*Control*	*Peak Hour*	*2015 Background*		*2015 W/ Project*	
			LOS	*Delay (sec/veh)*	*LOS*	*Delay (sec/veh)*
Big Springs Rd./Watkins Dr.	AWS	AM	**E**	**35.2**	**E**	**47.8**
		PM	**F**	**129.6**	**F**	**208.3**
El Cerrito Dr./Sycamore Canyon Blvd.	AWS	AM	C	15.2	C	15.2
		PM	B	11.3	B	11.3
Linden St./Aberdeen Dr.	AWS	AM	A	9.8	B	11.6
		PM	B	12.6	**E**	**41.6**
Campus Dr./Aberdeen Dr.	AWS	AM	B	10.2	B	12.0
		PM	B	10.8	C	17.2
Big Springs Rd./Campus Dr.	AWS	AM	A	8.7	A	10.0
		PM	B	10.4	C	18.1
Parking Access/Campus Dr.	AWS	AM	B	10.7	A	9.1
		PM	C	15.2	B	10.6
Campus Dr./Canyon Crest Dr.	AWS	AM	B	12.9	A	9.9
		PM	B	13.4	B	11.3
Le Conte Dr./Chicago Ave.	Minor	AM	**WB: F**	**70.6**	**WB: F**	**77.9**
		PM	WB: D	33.3	**WB: E**	**38.1**
Central Ave./I-215 SBR	Minor	AM	SB: C	18.7	SB: C	20.0
		PM	SB: C	20.7	SB: C	23.5
Central Ave./I-215 NBR	Minor	AM	**NB: F**	**60.3**	**NB: F**	**81.3**
		PM	**NB: F**	**320.0**	**NB: F**	**361.4**
Campus Dr./Citrus Dr.	Minor	AM	SB: A	9.5	SB: A	9.6
		PM	SB: B	10.5	SB: B	11.0
Eucalyptus Dr./Campus Dr.	Minor	AM	EB: B	10.3	EB: B	12.0
		PM	EB: B	11.9	EB: C	16.6

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

As shown in Table 4.14-19 and Table 4.14-20, implementation of the 2005 LRDP would degrade traffic conditions at the following 12 intersections. As shown previously in Tables 4.14-9 and 4.14-10, nine of these 12 intersections would be impacted even without LRDP traffic. The three intersections that would be significantly impacted only with the 2005 LRDP, but not in the future without project conditions, are identified with an asterisk (*):

1. The signalized intersection of 3rd Street/Chicago Avenue would operate at LOS E in the P.M. peak hour.*
2. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS F in the P.M. peak hour.
3. The signalized intersection of University Avenue/Chicago Avenue would operate at LOS F in the P.M. peak hour.

4. The signalized intersection of University Avenue/Iowa Avenue would operate at LOS E in the P.M. peak hour.*
5. The signalized intersection of Martin Luther King Boulevard/Chicago Avenue would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
6. The signalized intersection of Martin Luther King Boulevard/Canyon Crest would operate at LOS F in the P.M. peak hour.
7. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS F in the P.M. peak hour.
8. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
9. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
10. The stop-controlled intersection of Linden Street/Aberdeen Drive would operate at LOS E in the P.M. peak hour.*
11. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F and E in the A.M. and P.M. peak hours, respectively
12. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

Without improvement of roadway capacity at the identified intersections and with 2015 background, implementation of the 2005 LRDP as well as anticipated City growth would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system at 12 intersections that would operate at LOS E or F during the A.M. or P.M. peak hour, or both. The location of these significantly impacted intersections is depicted in Figure 4.14-2. Only three of the 12 significantly impacted intersections are impacted due to the LRDP, two of which are under the jurisdiction of the Campus.

To mitigate these potentially significant traffic impacts, improvements to intersection capacity could be implemented including widening of signalized intersections to provide additional turn or through lanes, modification of signal timing or phasing, widening of unsignalized intersections to provide additional turn or through lanes, installation of signals at unsignalized intersections, or additional controls at unsignalized intersections (e.g., convert a two-way STOP sign controlled intersection with a four-way STOP controls.

As noted in the Methodology section and as depicted in Table 4.14-10 and Table 4.14-11, areawide increases in traffic under the 2015 background traffic (without LRDP project) conditions would significantly degrade traffic conditions at nine of the study intersections with Iowa Avenue remaining as a two-lane roadway between University Avenue and Martin Luther King Boulevard. Improvements to those intersections were identified in the Methodology section above, and these improvements would be assessed and considered for implementation by the City independent of the proposed project.

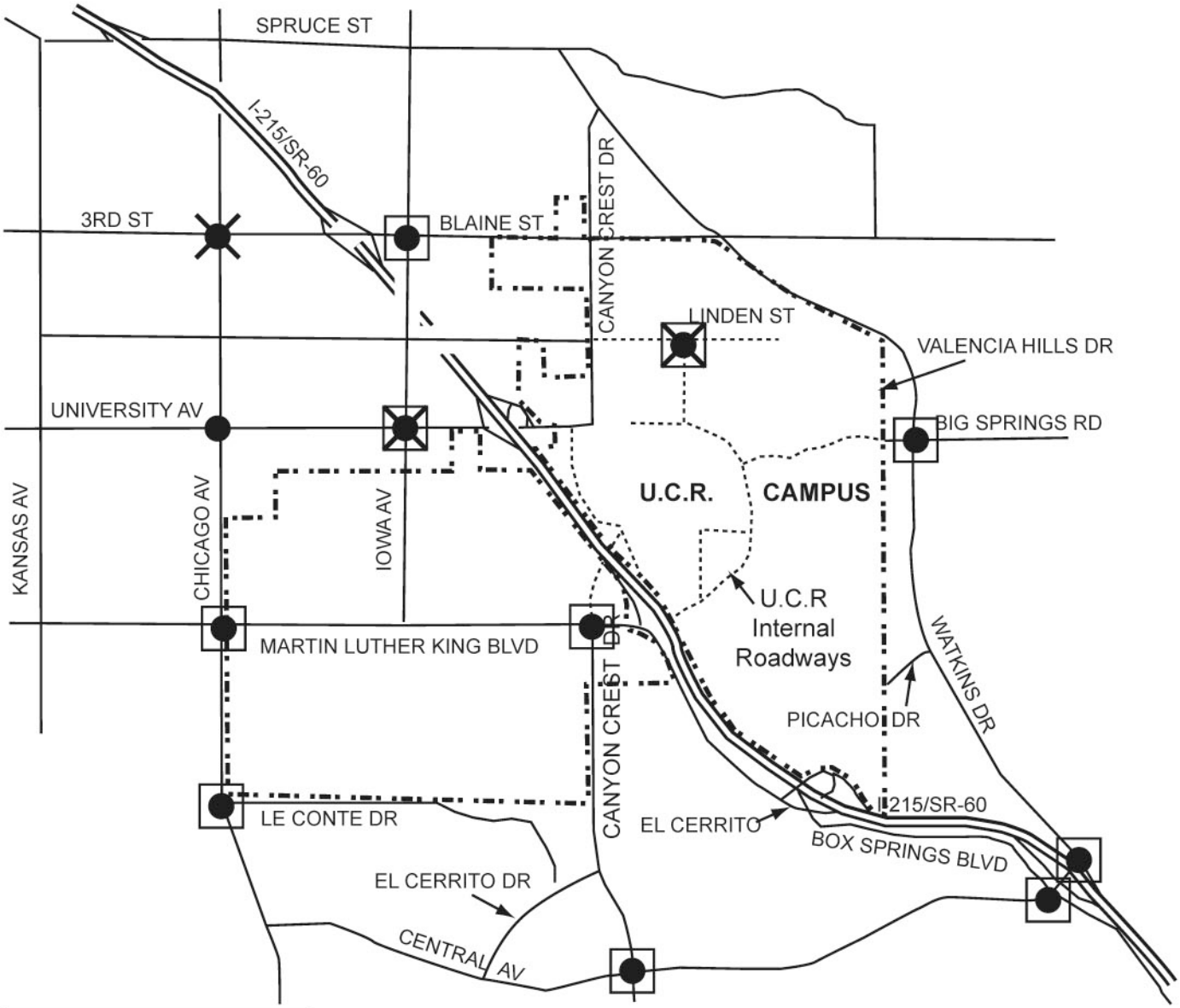


FIGURE **4.14-2**

2015 Project - Impacted Intersections

Not to Scale

10537-00

Source: Wilbur Smith Associates, 2004

UC Riverside

EIP ASSOCIATES

If the City of Riverside improvements identified above under the future without project conditions are undertaken, then the following Mitigation Measures 4.14-1(a) through 4.14-1(g) would bring all of the adversely affected study intersections into acceptable operating conditions upon implementation of the proposed project:

MM 4.14-1(a) *The intersection of 3rd Street/Chicago Avenue would require an additional left-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(b) *In addition to the improvements identified for the 'Without Project' scenario, the intersection of Blaine Street/Iowa Avenue would require an additional left-turn lane on the eastbound approach, and a separate through and right-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(c) *In addition to the improvements identified for the 'Without Project' scenario, the intersection of University Avenue/Chicago Avenue would require a separate through and a right-turn lane on the southbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(d) *The intersection of University Avenue/Iowa Avenue would require an additional left-turn lane on the eastbound approach to operate at LOS D or better. The approach currently consists of one left-turn lane, two through lanes, and one right-turn lane. The mitigated approach would consist of two left-turn lanes, one through lane, and one shared through/right-turn lane. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(e) *In addition to the improvements identified for the 'Without Project' scenario, the intersection of Martin Luther King Boulevard/Chicago Avenue would require an additional through lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(f) *In addition to the improvements identified for the 'Without Project' scenario, the intersection of Martin Luther King Boulevard/Canyon Crest Drive would require an additional left-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.)*

MM 4.14-1(g) *The intersection of Linden Street/Aberdeen Drive would require a shared through/left-turn lane and a right-turn lane on the eastbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.)*

The following intersections would not require additional improvements beyond those identified for the future without project scenario to operate acceptably. The improvements would be necessary, even

without implementation of the 2005 LRDP, to address the impacts from traffic growth associated with projects other than the LRDP. While the additional traffic generated by the proposed project would further increase the magnitude of the impacts at these intersections, no further improvements beyond those already identified would be necessary to address the impacts. However, since the 2005 LRDP would contribute to significant impacts at these intersections, the University could be required to contribute fair share payments to these improvements.

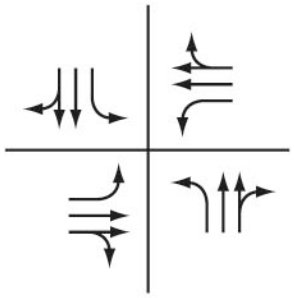
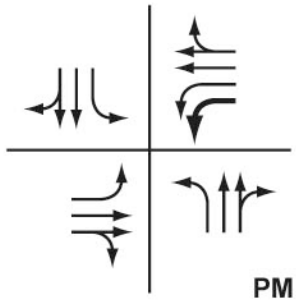
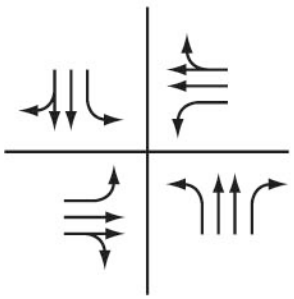
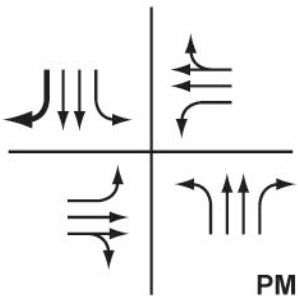
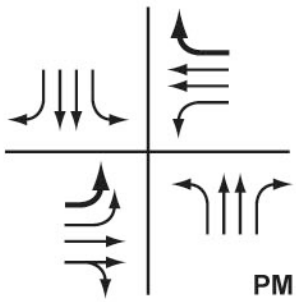
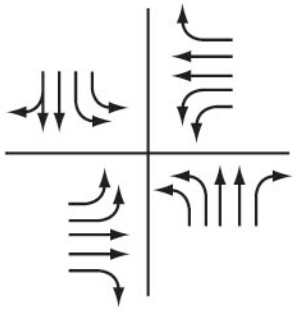
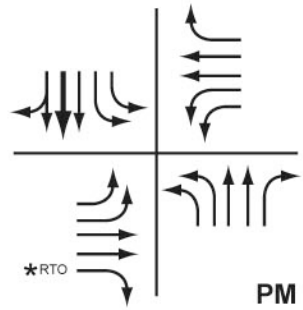
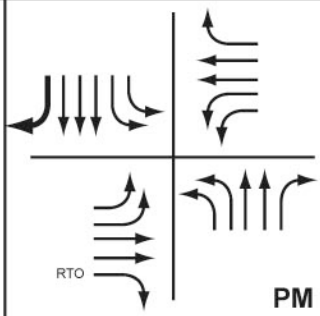
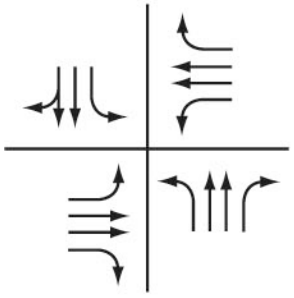
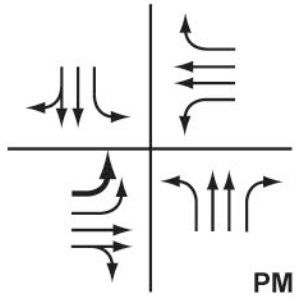
- Central Avenue/Canyon Crest Drive
- Central Avenue/Box Springs Boulevard
- Big Springs Road/Watkins Drive
- Le Conte Drive/Chicago Ave
- Central Avenue/I-215 Northbound Ramp

The City of Riverside has not committed to improvements at these intersections. Further, the intersections of Central Avenue/Canyon Crest Drive, Central Avenue/Box Springs Boulevard, Le Conte Drive/Chicago Avenue, 3rd Street/Chicago Avenue, Blaine Street/Iowa Avenue, University Avenue/Chicago Avenue, University Avenue/Iowa Avenue, and Martin Luther King Boulevard/Chicago Avenue could involve ROW acquisition, and land use issues associated with this acquisition, as discussed previously. Improvements to Big Springs Road/Watkins Drive and Central Avenue/ I-215 Northbound Ramp would involve minor improvements such as adjustments to signal phases and roadway restriping.

The mitigation measures identified for both background conditions and LRDP implementation are depicted on Figures 4.14-3(a) through 4.13-3(c).

With implementation of the identified improvements, identified as mitigation measures MM 4.14-1(a) through (g), and improvements necessary for the City to implement as part of background traffic growth future traffic conditions would operate at LOS D or better at all intersections, as shown in Table 4.14-21. With implementation of the identified mitigation measures and background mitigation by the City, implementation of the 2005 LRDP would not cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections), and this impact would be less than significant.

All off-campus intersection improvements would be within the jurisdiction of the City of Riverside, not the University, to implement. This includes Mitigation Measures 4.14-1(a), (b), (c), (d), and (e) identified above. The University is willing to contribute its fair or appropriate share towards the identified intersection improvements, meaning the University will negotiate for a contribution to the upgrade pursuant to procedures similar to those described in Government Code 54999 *et seq.* for contributions to utilities. In addition, the University will pay its fair share only if the City of Riverside has established a mechanism to collect funds from other developers or entities that are contributing to traffic impacts and implements the improvements. Because off-campus intersection improvements are beyond the jurisdiction of The Regents to implement, the identified improvements may not, therefore, be

INTERSECTION	EXISTING LANE CONFIGURATION	2015 IMPROVEMENT NEEDED WITHOUT UCR LRDP	ADDITIONAL IMPROVEMENT WITH UCR LRDP
3RD ST (E/W) @ CHICAGO AVE (N/S)		NONE	 **PM**
BLAINE ST (E/W) @ IOWA AVE (N/S)		 **PM**	 **PM**
UNIVERSITY AVE (E/W) @ CHICAGO AVE (N/S)		 *RTO **PM**	 RTO **PM**
UNIVERSITY AVE (E/W) @ IOWA AVE (N/S)		NONE	 **PM**

LEGEND	
*	Added Improvement
RTO	Right Turn Overlap Signal Phase
	Stop Sign
NOTE: Improvement Shown in Bold Font	

FIGURE **4.14-3 (a)**

Summary of Needed Intersection Improvements Year 2015 Scenario (2-Lane Iowa Avenue Condition)

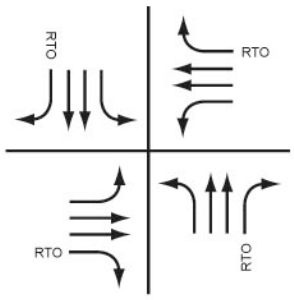
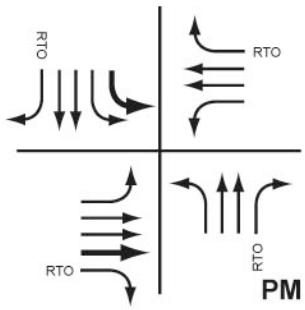
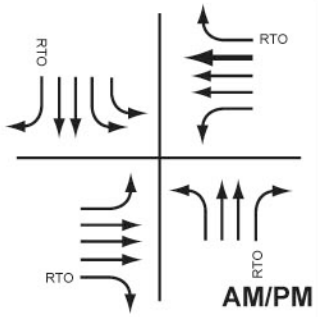
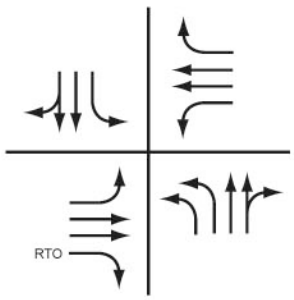
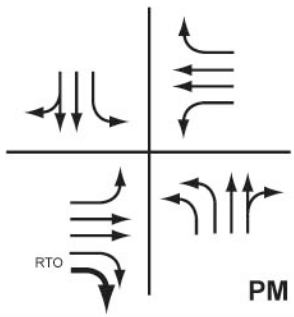
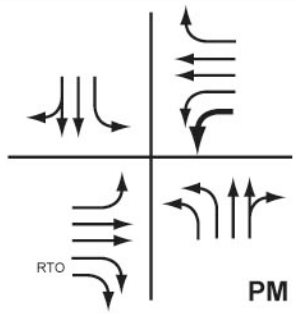
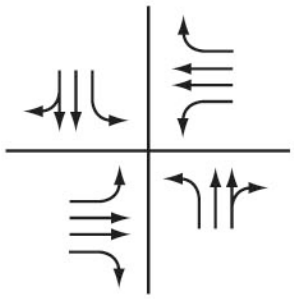
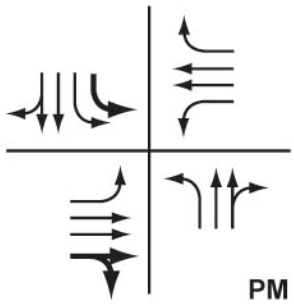
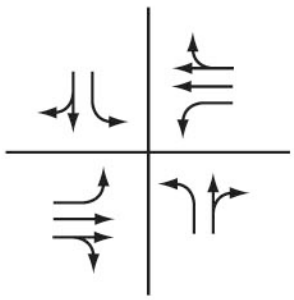
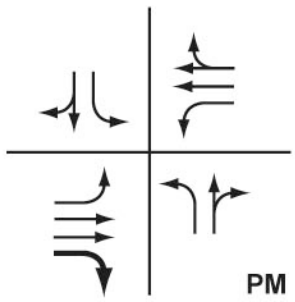
Not to Scale

10537-00

Source: Wilbur Smith Associates, 2004

UC Riverside

EIP ASSOCIATES

INTERSECTION	EXISTING LANE CONFIGURATION	2015 IMPROVEMENT NEEDED WITHOUT UCR LRDP	ADDITIONAL IMPROVEMENT WITH UCR LRDP
MLK BLVD (E/W) @ CHICAGO AVE (N/S)			
MLK BLVD (E/W) @ CANYON CREST DR (N/S)			
CENTRAL AVE (E/W) @ CANYON CREST DR (N/S)			NONE
CENTRAL AVE (E/W) @ BOX SPRINGS BLVD (N/S)			NONE

LEGEND	
*	Added Improvement
RTO	Right Turn Overlap Signal Phase
	Stop Sign
NOTE: Improvement Shown in Bold Font	

10537-00

FIGURE **4.14-3 (b)**

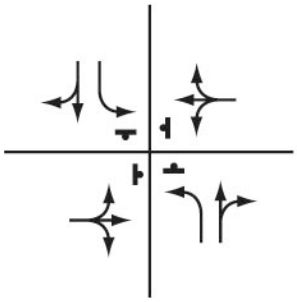
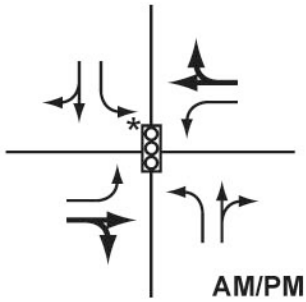
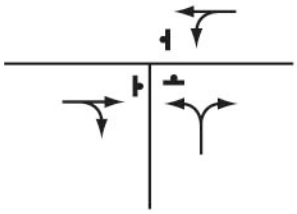
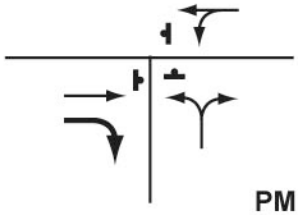
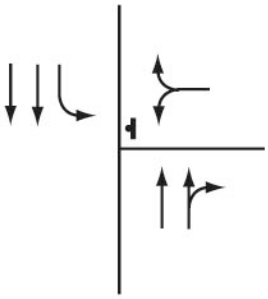
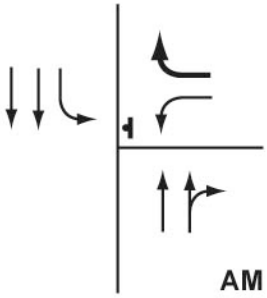
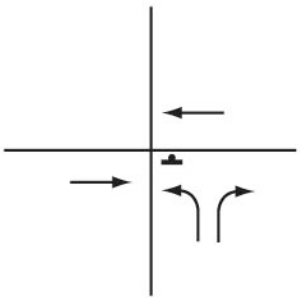
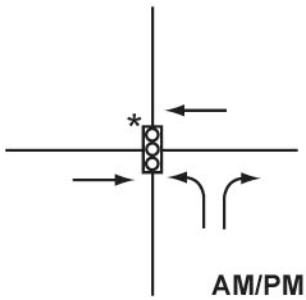
Summary of Needed Intersection Improvements Year 2015 Scenario (2-Lane Iowa Avenue Condition)

Source: Wilbur Smith Associates, 2004

UC Riverside

Not to Scale

EIP ASSOCIATES

INTERSECTION	EXISTING LANE CONFIGURATION	2015 IMPROVEMENT NEEDED WITHOUT UCR LRDP	ADDITIONAL IMPROVEMENT WITH UCR LRDP
BIG SPRINGS RD (E/W) @ WATKINS DR (N/S)		 **AM/PM**	NONE
LINDEN ST (E/W) @ ABERDEEN DR (N/S)		NONE	 **PM**
LE CONTE DR (E/W) @ CHICAGO AVE (N/S)		 **AM**	NONE
CENTRAL AVE (E/W) @ I-215 NB RAMPS (N/S)		 **AM/PM**	NONE

LEGEND	
*	Added Improvement
RTO	Right Turn Overlap Signal Phase
	Stop Sign

NOTE: Improvement Shown in Bold Font

FIGURE **4.14-3 (c)**

Summary of Needed Intersection Improvements Year 2015 Scenario (2-Lane Iowa Avenue Condition)

Source: Wilbur Smith Associates, 2004

Not to Scale

10537-00

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Table 4.14-21 Future Traffic Conditions (Background and LRDP) with Mitigation at Selected Intersections (With Two-Lane Iowa Avenue Section)

Intersection	*Peak Hour*	*Future w/o Mitigation*			*With Mitigation*		
		Control	*LOS*	*Delay*	*Control*	*LOS*	*Delay*
3rd St./Chicago Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	59.9		D	36.3
Blaine St./Iowa Ave.	AM	Signal	—	—	Signal	—	—
	PM		F	110.3		D	50.6
University Ave./Chicago Ave.	AM	Signal	—	—	Signal	—	—
	PM		F	87.3		D	52.6
University Ave./Iowa Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	70.0		D	48.9
Martin Luther King Blvd./Chicago Ave.	AM	Signal	E	56.3	Signal	D	47.8
	PM		F	85.9		D	53.2
Martin Luther King Blvd./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		F	110.7		D	42.1
Central Ave./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		F	88.1		D	53.5
Central Ave./Box Springs Blvd.	AM	Signal	—	—	Signal	—	—
	PM		E	66.7		D	46.2
Big Springs Rd./Watkins Dr.	AM	AWS	E	47.8	Signal	A	7.6
	PM		F	208.3		B	15.1
Linden St./Aberdeen Dr.	AM	AWS	—	—	AWS	—	—
	PM		E	41.6		D	30.0
Le Conte Dr./Chicago Ave.	AM	Minor	WB: F	77.9	Minor	WB: E	36.5
	PM		WB: E	38.1		WB: D	29.9
Central Ave./I—215 NBR	AM	Minor	NB: F	81.3	Signal	B	19.4
	PM		NB: F	361.4		C	27.1

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

available to mitigate the impacts associated with implementation of the 2005 LRDP. However, the identified intersections improvements are technically feasible, and the University is willing to contribute funding for improvements at those intersections that would be significantly impacted by implementation of the 2005 LRDP. Further, similar to roadway improvements identified for the City under future scenarios, these Mitigation Measures would require acquisition of additional ROW. Preliminary evaluation of the needed acquisition indicates that secondary effects such as removal of parking lots, portions of structures, and property frontage would occur. These secondary effects could impair the functionality of adjacent uses, and could be financially infeasible. However, at some intersections, acquisition of additional right-of-way may be feasible. Nevertheless, as these improvements are located off Campus, the ultimate decision on implementation would be under the jurisdiction of the City.

Off-campus signal and physical intersection improvements are beyond the jurisdiction of The Regents to implement, as these intersections are located within the City. The City of Riverside has a Capital Improvement Program (CIP) for the years 2004 through 2009, which identifies capital project needs, including but not limited to road maintenance/construction; financial sources to implement the projects; and project timelines. The Transportation section of the CIP is primarily funded through State or federal grants and Measure A, the regional transportation sales tax. Thus, through the City's CIP these improvements could occur. However, if the City did not mitigate for background traffic, even with implementation of the identified LRDP Planning Strategies, continued implementation (and expansion) of the existing campus TDM programs, and development of substantial on-campus housing, the impacts of the implementation of the 2005 LRDP could remain ***significant and unavoidable*** at the following intersections:

1. The signalized intersection of 3rd Street/Chicago Avenue would operate at LOS E in the P.M. peak hour.
2. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS F in the P.M. peak hour.
3. The signalized intersection of University Avenue/Chicago Avenue would operate at LOS F in the P.M. peak hour.
4. The signalized intersection of University Avenue/Iowa Avenue would operate at LOS E in the P.M. peak hour.
5. The signalized intersection of Martin Luther King Boulevard/Chicago Avenue would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
6. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS F in the P.M. peak hour.
7. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
8. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
9. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F and E in the A.M. and P.M. peak hours, respectively
10. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

It should be noted that eight of the ten intersections identified above would be significantly impacted even without implementation of the LRDP project, and the proposed project would contribute only a portion of the traffic to these intersections that would result in unacceptable LOS. The intersections of 3rd Street/Chicago Avenue and University Avenue/Iowa Avenue would not be significantly impacted in the future without project scenario, but would be significantly impacted by the proposed project.

Mitigation Measures 4.14-1(f) and 4.14-1(g) are under the jurisdiction of the University, and would be feasible to implement. Consequently, impacts would be mitigated to less than significant at the intersection of Martin Luther King Boulevard and Canyon Crest and Linden Street and Aberdeen Drive.

Scenario 2: Four-Lane Iowa Avenue

Under the scenario where Iowa Avenue would become a four-lane roadway, the Traffic Study concludes that 10 study intersections would operate at unacceptable levels of service under the 2015 project traffic (with LRDP) conditions, two more than the two-lane scenario. Out of these 10 intersections, seven intersections would be impacted without LRDP traffic, nine without LRDP at two lanes. Table 4.14-22 shows the future LOS at the signalized study intersections and Table 4.14-23 shows the future LOS at the unsignalized study intersections. Intersections that would exceed LOS "D" are highlighted with **bold** text.

As shown in Table 4.14-22 and Table 4.14-23, implementation of the 2005 LRDP would degrade traffic conditions at the following 10 intersections. As shown previously in Tables 4.14-12 and 4.14-13, seven of these 10 intersections would be impacted without LRDP traffic. The three intersections that would be significantly impacted only with the 2005 LRDP, but not in the future without project conditions, are identified with an asterisk (*):

Table 4.14-22 Future Traffic Conditions at Signalized Intersections Without and With 2005 LRDP (Four-Lane Iowa Avenue Section)

		2015 Background		*2015 W/ Project*	
Intersection	*Peak Hour*	*LOS*	*Delay (sec/veh)*	*LOS*	*Delay (sec/veh)*
3rst St./Kansas Ave.	AM	C	21.5	C	22.4
	PM	C	26.2	C	28.9
3rd St./Chicago Ave.	AM	D	39.2	D	50.5
	PM	D	39.0	D	46.5
3rd St./I-215 SBR	AM	C	23.9	C	30.6
	PM	B	19.7	C	26.4
3rd St./I-215 NBR	AM	B	20.0	C	23.4
	PM	C	21.8	C	24.4
Blaine St./Iowa Ave.	AM	D	43.3	D	51.4
	PM	**E**	**56.8**	**F**	**107.4**
Blaine St./Canyon Crest Dr.	AM	C	22.0	C	24.1
	PM	C	34.6	D	53.0
Blaine St./Watkins Dr.	AM	C	32.7	C	34.2
	PM	C	27.0	D	45.4
Linden St./Chicago Ave.	AM	B	16.5	B	17.1
	PM	B	12.7	B	13.0
Linden St./Iowa Ave.	AM	C	23.3	C	23.6
	PM	C	24.2	C	25.8

Table 4.14-22 Future Traffic Conditions at Signalized Intersections Without and With 2005 LRDP (Four-Lane Iowa Avenue Section)

Intersection	*Peak Hour*	*2015 Background*		*2015 W/ Project*	
		LOS	*Delay (sec/veh)*	*LOS*	*Delay (sec/veh)*
Linden St./Canyon Crest Dr.	AM	C	26.0	C	26.2
	PM	C	28.9	C	34.1
University Ave./Kansas Ave.	AM	B	13.1	B	14.6
	PM	C	20.3	C	34.1
University Ave./Chicago Ave.	AM	C	32.5	C	33.4
	PM	D	38.5	D	50.6
University Ave./Iowa Ave.	AM	D	38.5	D	39.1
	PM	D	50.8	**F**	**82.7**
University Ave./I-215 SBR	AM	C	21.0	C	24.8
	PM	A	9.0	C	34.0
University Ave./I-215 NBR	AM	C	28.9	C	30.1
	PM	C	26.7	D	42.9
University Ave./Campus Dr.	AM	B	18.6	B	11.5
	PM	C	23.7	B	15.1
Martin Luther King Blvd./Chicago Ave.	AM	D	36.4	D	44.4
	PM	D	52.3	**E**	**64.5**
Martin Luther King Blvd./Iowa Ave.	AM	C	21.3	C	28.7
	PM	C	25.2	D	36.3
Martin Luther King Blvd./Canyon Crest Dr.	AM	C	34.0	D	53.1
	PM	**F**	**104.7**	**F**	**116.6**
Martin Luther King Blvd./I-215 SBR	AM	B	15.8	C	20.1
	PM	B	18.7	C	28.2
Martin Luther King Blvd./I-215 NBR	AM	B	10.5	B	14.7
	PM	A	7.1	B	14.1
Central Ave./Chicago Ave.	AM	C	21.8	C	21.0
	PM	D	43.3	D	45.9
Central Ave./Canyon Crest Dr.	AM	D	37.3	D	39.8
	PM	**E**	**79.4**	**F**	**88.1**
Central Ave./Box Springs Blvd.	AM	C	33.1	C	33.2
	PM	**E**	**65.9**	**E**	**66.7**

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

Table 4.14-23 Future Traffic Conditions at Unsignalized Intersections Without and With 2005 LRDP (Four-Lane Iowa Avenue Section)

Intersection	*Control*	*Peak Hour*	*2015 Background*		*2015 W/ Project*	
			LOS	*Delay (sec/veh)*	*LOS*	*Delay (sec/veh)*
Big Springs Rd./Watkins Dr.	AWS	AM	**E**	**35.2**	**E**	**47.8**
		PM	**F**	**129.6**	**F**	**208.3**
El Cerrito Dr./Sycamore Canyon Blvd.	AWS	AM	C	15.2	C	15.2
		PM	B	11.3	B	11.3
Linden St./Aberdeen Dr.	AWS	AM	A	9.8	B	11.6
		PM	B	12.6	**E**	**41.6**
Campus Dr./Aberdeen Dr.	AWS	AM	B	10.2	B	12.0
		PM	B	10.8	C	17.2
Big Springs Rd./Campus Dr.	AWS	AM	A	8.7	A	10.0
		PM	B	10.4	C	18.1
Parking Access/Campus Dr.	AWS	AM	B	10.7	A	9.1
		PM	C	15.2	B	10.6
Campus Dr./Canyon Crest Dr.	AWS	AM	B	12.9	A	9.9
		PM	B	13.4	B	11.3
Le Conte Dr./Chicago Ave.	Minor	AM	**WB: F**	**70.6**	**WB: F**	**77.9**
		PM	WB: D	33.3	**WB: E**	**38.1**
Central Ave./I-215 SBR	Minor	AM	SB: C	18.7	SB: C	20.0
		PM	SB: C	20.7	SB: C	23.5
Central Ave./I-215 NBR	Minor	AM	**NB: F**	**60.3**	**NB: F**	**81.3**
		PM	**NB: F**	**320.0**	**NB: F**	**361.4**
Campus Dr./Citrus Dr.	Minor	AM	SB: A	9.5	SB: A	9.6
		PM	SB: B	10.5	SB: B	11.0
Eucalyptus Dr./Campus Dr.	Minor	AM	EB: B	10.3	EB: B	12.0
		PM	EB: B	11.9	EB: C	16.6

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

1. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS F in the P.M. peak hour.
2. The signalized intersection of University Avenue/Iowa Avenue would operate at LOS F in the P.M. peak hour.*
3. The signalized intersection of Martin Luther King Boulevard/Chicago Avenue would operate at LOS E in the P.M. peak hour.*
4. The signalized intersection of Martin Luther King Boulevard/Canyon Crest would operate at LOS F in the P.M. peak hour.
5. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS F in the P.M. peak hour.

6. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
7. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
8. The stop-controlled intersection of Linden Street/Aberdeen Drive would operate at LOS E in the P.M. peak hour.*
9. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F and E in the A.M. and P.M. peak hours, respectively
10. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

Without improvement of roadway capacity at the identified intersections and with 2015 background, implementation of the 2005 LRDP would cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system at 10 intersections that would operate at LOS E or F during the A.M. or P.M. peak hour, or both. The location of these significantly impacted intersections is depicted in Figure 4.14-2.

As noted in the Methodology section and as depicted in Table 4.14-13 and Table 4.14-14, areawide increases in traffic under the 2015 background traffic (without LRDP project) conditions would significantly degrade traffic conditions at seven of the study intersections with Iowa Avenue configured as a four-lane roadway between University Avenue and Martin Luther King Boulevard. Mitigation measures to improve those intersections were identified in the Methodology section above.

If the improvements identified above under the future without project conditions are undertaken, then following additional mitigation measures would bring all of the adversely affected study intersections (with Iowa Avenue configured as a four-lane roadway) into acceptable operating conditions upon implementation of the proposed project:

MM 4.14-1(h) *In addition to the improvements identified for the 'Without Project' scenario, the intersection of Blaine Street/Iowa Avenue would require an additional left-turn lane on the southbound approach, an additional left-turn lane on the eastbound approach, an additional left-turn lane on the westbound approach, and a separate through and right-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(i) *The intersection of University Avenue/Iowa Avenue would require an additional left-turn lane on the eastbound approach, and a separate through and right lane on the southbound approach to operate at LOS D or better. The southbound approach currently consists of one left-turn lane, one through lane, and one shared through/right-turn lane. The mitigated southbound approach would consist of one left-turn lane, two through lanes, and one right-turn lane. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(j) *The intersection of Martin Luther King Boulevard/Chicago Avenue would require an additional through and an additional right-turn lane on the eastbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the City of Riverside.)*

MM 4.14-1(k) *In addition to the improvements identified for the 'Without Project' scenario, the intersection of Martin Luther King Boulevard/Canyon Crest Drive would require an additional left-turn lane on the westbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.)*

MM 4.14-1(l) *The intersection of Linden Street/Aberdeen Drive would require a shared through/left-turn lane and a right-turn lane on the eastbound approach to operate at LOS D or better. (This intersection is under the jurisdiction of the University.)*

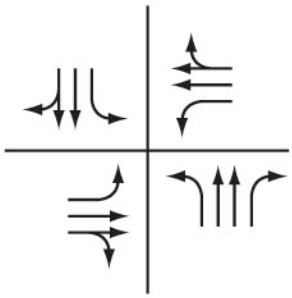
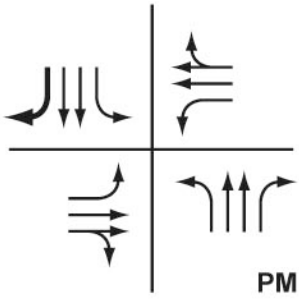
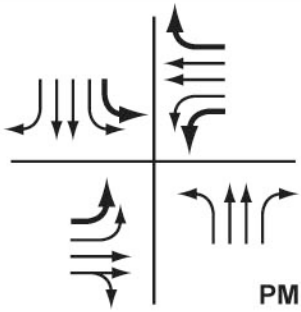
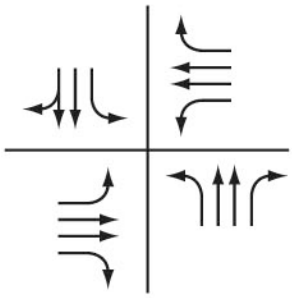
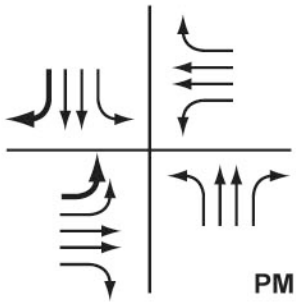
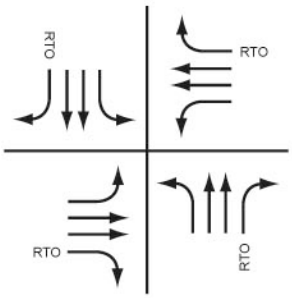
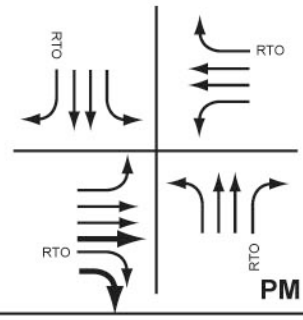
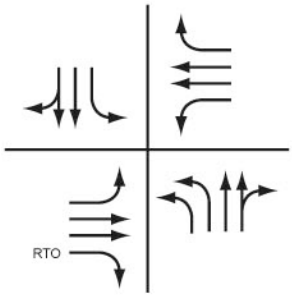
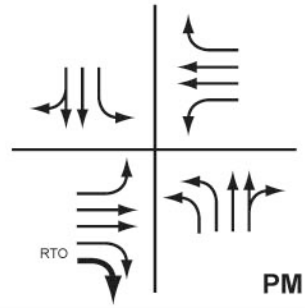
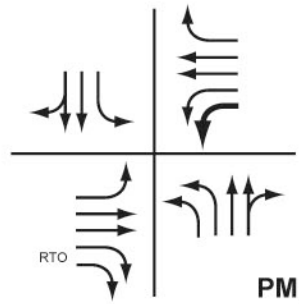
The following intersections would not require additional improvements beyond those identified for the future without project scenario to operate acceptably. The improvements would be necessary even without implementation of the 2005 LRDP, and, while the proposed project would significantly impact these intersections, no further improvements would be necessary to address impacts. However, since the 2005 LRDP would contribute to significant impacts at these intersections, the University could be required to contribute fair share payments to these improvements.

- Central Avenue/Canyon Crest
- Central Avenue/Box Springs Boulevard
- Big Springs Road/Watkins Drive
- Le Conte Drive/Chicago Ave
- Central Avenue/I-215 Northbound Ramp

The City of Riverside has not committed to future improvements at these intersections. Further, the intersections of Central Avenue/Canyon Crest Drive, Central Avenue/Box Springs Boulevard, Le Conte Drive/Chicago Avenue, Blaine Street/Iowa Avenue, University Avenue/Iowa, and Martin Luther King Boulevard/Chicago Avenue could involve ROW acquisition, and land use issues associated with this acquisition, as discussed previously. Improvements to Big Springs Road/Watkins Drive and Central Avenue/ I-215 Northbound Ramp would involve minor improvements such as roadway restriping.

The mitigation measures identified for both background conditions and LRDP implementation are depicted on Figures 4.14-4(a) through 4.14-4(c).

With implementation of the Mitigation Measures identified as 4.14-1(h) through (l), in addition to improvements identified for the City under future no-project conditions, future traffic conditions would operate at LOS D or better at all intersections, as shown in Table 4.14-24.

INTERSECTION	EXISTING LANE CONFIGURATION	2015 IMPROVEMENT NEEDED WITHOUT UCR LRDP	ADDITIONAL IMPROVEMENT WITH UCR LRDP
BLAINE ST (E/W) @ IOWA AVE (N/S)		 **PM**	 **PM**
UNIVERSITY AVE (E/W) @ IOWA AVE (N/S)		NONE	 **PM**
MLK BLVD (E/W) @ CHICAGO AVE (N/S)		NONE	 **PM**
MLK BLVD (E/W) @ CANYON CREST DR (N/S)		 **PM**	 **PM**

LEGEND	
*	Added Improvement
RTO	Right Turn Overlap Signal Phase
	Stop Sign
NOTE: Improvement Shown in Bold Font	

FIGURE **4.14-4 (a)**

Summary of Needed Intersection Improvements Year 2015 Scenario (4-Lane Iowa Avenue Condition)

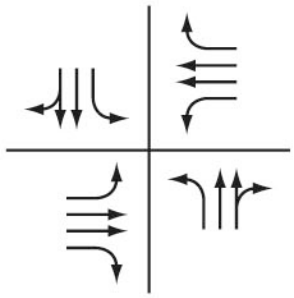
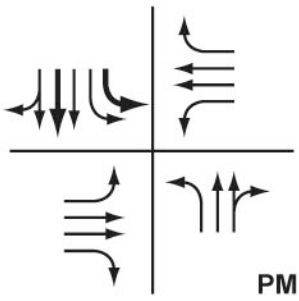
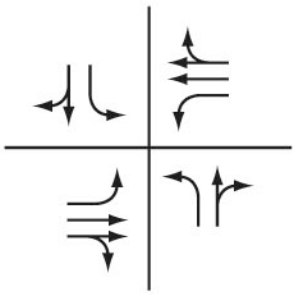
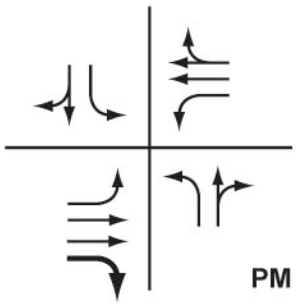
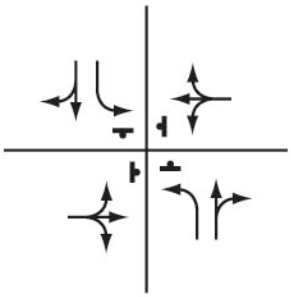
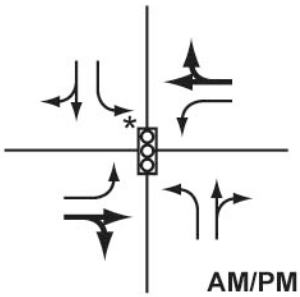
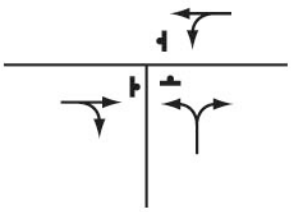
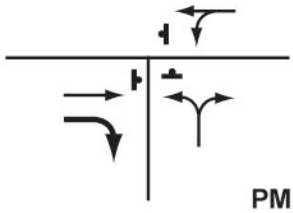
Not to Scale

10537-00

Source: Wilbur Smith Associates, 2004

UC Riverside

EIP ASSOCIATES

INTERSECTION	EXISTING LANE CONFIGURATION	2015 IMPROVEMENT NEEDED WITHOUT UCR LRDP	ADDITIONAL IMPROVEMENT WITH UCR LRDP
CENTRAL AVE (E/W) @ CANYON CREST DR (N/S)		 **PM**	NONE
CENTRAL AVE (E/W) @ BOX SPRINGS RD (N/S)		 **PM**	NONE
BIG SPRINGS RD (E/W) @ WATKINS DR (N/S)		 **AM/PM**	NONE
LINDEN ST (E/W) @ ABERDEEN DR (N/S)		NONE	 **PM**

LEGEND			
*	Added Improvement		Stop Sign
RTO	Right Turn Overlap Signal Phase		Traffic Signal

NOTE: Improvement Shown in Bold Font

10537-00

FIGURE **4.14-4 (b)**

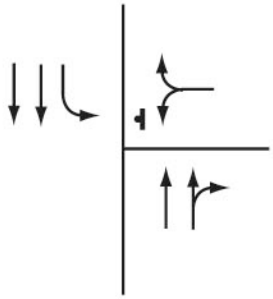
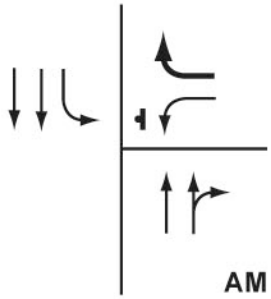
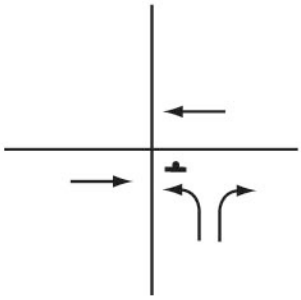
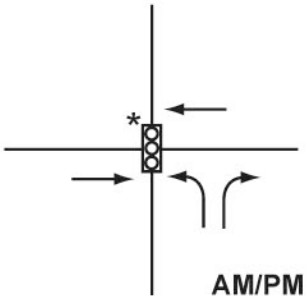
Summary of needed Intersection Improvements Year 2015 Scenario (4-Lane Iowa Avenue Condition)

Source: Wilbur Smith Associates, 2004

UC Riverside

Not to Scale

EIP ASSOCIATES

INTERSECTION	EXISTING LANE CONFIGURATION	2015 IMPROVEMENT NEEDED WITHOUT UCR LRDP	ADDITIONAL IMPROVEMENT WITH UCR LRDP
LE CONTE DR (E/W) @ CHICAGO AVE (N/S)		 **AM**	NONE
CENTRAL AVE (E/W) @ I-215 NB RAMPS (N/S)		 **AM/PM**	NONE

LEGEND	
*	Added Improvement
RTO	Right Turn Overlap Signal Phase
	Stop Sign

NOTE: Improvement Shown in Bold Font

FIGURE **4.14-4 (c)**

Summary of needed Intersection Improvements Year 2015 Scenario (4-Lane Iowa Avenue Condition)

Not to Scale

10537-00

Source: Wilbur Smith Associates, 2004

UC Riverside

EIP ASSOCIATES

With implementation of the identified mitigation measures, implementation of the 2005 LRDP would not cause an increase in traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections), and this impact would be less than significant.

Table 4.14-24 Future Traffic Conditions (Background and LRDP) with Mitigation at Selected Intersections (With Four-Lane Iowa Avenue Section)

		Future w/o Mitigation			*With Mitigation*		
Intersection	*Peak Hour*	*Control*	*LOS*	*Delay (sec/veh)*	*Control*	*LOS*	*Delay (sec/veh)*
Blaine St./Iowa Ave.	AM	Signal	—	—	Signal	—	—
	PM		F	107.4		D	52.6
University Ave./Iowa Ave.	AM	Signal	—	—	Signal	—	—
	PM		F	82.7		D	48.7
Martin Luther King Blvd./Chicago Ave.	AM	Signal	—	—	Signal	—	—
	PM		E	64.5		D	52.1
Martin Luther King Blvd./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		F	116.6		D	44.5
Central Ave./Canyon Crest Dr.	AM	Signal	—	—	Signal	—	—
	PM		F	88.1		D	52.2
Central Ave./Box Springs Blvd.	AM	Signal	—	—	Signal	—	—
	PM		E	66.7		D	46.2
Big Springs Rd./Watkins Dr.	AM	AWS	E	47.8	Signal	A	7.6
	PM		F	208.3		B	15.1
Linden St./Aberdeen Dr. (on campus)	AM	AWS	—	—	AWS	—	—
	PM		E	41.6		D	30.0
Le Conte Dr./Chicago Ave.	AM	Minor	WB: F	77.9	Minor	WB: E	36.5
	PM		WB: E	38.1		WB: D	29.9
Central Ave./I—215 NBR	AM	Minor	NB: F	81.3	Signal	B	19.4
	PM		NB: F	361.4		C	27.1

Source: UC Riverside LRDP EIR Traffic Impact Study, March 2004

As is true for the two-lane Iowa Avenue scenario, all off-campus intersection improvements would be within the jurisdiction of the City of Riverside, not the University, to implement. This includes Mitigation Measures 4.14-1(h), (i), and (j) identified above. The University is willing to contribute its fair or appropriate share towards the identified intersection improvements, meaning the University will negotiate for a contribution to the upgrade pursuant to procedures similar to those described in Government Code 54999 *et seq.* for contributions to utilities. In addition, the University will pay its fair share only if the City of Riverside has established a mechanism to collect funds from other developers or entities that are contributing to traffic impacts and implements the impacts. Because off-campus

intersection improvements are beyond the jurisdiction of The Regents to implement, the identified improvements may not, therefore, be available to mitigate the impacts associated with implementation of the 2005 LRDP. However, the identified intersections improvements are technically feasible, and the University is willing to contribute funding for improvements at those intersections that would be significantly impacted by implementation of the 2005 LRDP. Further, similar to roadway improvements identified for the City under future scenarios, these Mitigation Measures would require acquisition of additional ROW. Preliminary evaluation of the needed acquisition indicates that secondary effects such as removal of parking lots, portions of structures, and property frontage would occur. These secondary effects could impair the functionality of adjacent uses, and could be financially infeasible. However, at some intersections, acquisition of additional right-of-way may be feasible. Nevertheless, as these improvements are located off Campus, the ultimate decision on implementation would be under the jurisdiction of the City. Further, the only significantly impacted intersection located on campus is Aberdeen Drive/Linden Street.

Because off-campus signal and physical intersection improvement are beyond the jurisdiction of The Regents to implement, even with implementation of the identified LRDP Planning Strategies, continued implementation (and expansion) of the existing campus TDM programs, and development of substantial on-campus housing, the impacts of the implementation of the 2005 LRDP could remain ***significant and unavoidable*** at the intersections listed below. The intersections that would be significantly impacted only with the 2005 LRDP, but not in the future without project conditions, are identified with an asterisk (*):

1. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS F in the P.M. peak hour.
2. The signalized intersection of University Avenue/Iowa Avenue would operate at LOS F in the P.M. peak hour.*
3. The signalized intersection of Martin Luther King Boulevard/Chicago Avenue would operate at LOS E in the P.M. peak hour.*
4. The signalized intersection of Martin Luther King Boulevard/Canyon Crest Drive would operate at LOS F in the P.M. peak hour.
5. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS F in the P.M. peak hour.
6. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
7. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
8. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F and E in the A.M. and P.M. peak hours, respectively
9. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

It should be noted that seven of the nine intersections identified above would be significantly impacted even without implementation of the LRDP project, and the proposed project would contribute only a portion of the traffic to these intersections that would result in unacceptable LOS. The intersections of University Avenue/Iowa Avenue and Martin Luther King Boulevard/Chicago Avenue would not be significantly impacted in the future without project scenario, but would be significantly impacted by the proposed project.

Mitigation Measures 4.14-1(k) and 4.14-1(l) are under the jurisdiction of the University, and would be feasible to implement. Consequently, impacts would be mitigated to less than significant at the intersection of Martin Luther King Boulevard and Canyon Crest and Linden Street and Aberdeen Drive.

Impact 4.14-2 **Implementation of the 2005 LRDP would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. Even with implementation of the relevant Program and Practice, this impact would be *significant and unavoidable*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus. Construction vehicle traffic associated with construction of new buildings, and continued renovation and modification of existing campus buildings could result in short-term impacts at intersections in the vicinity of the campus.

During the planning horizon of the 2005 LRDP, continued implementation of the following existing campus Programs and Practices (PP) would reduce congestion by construction vehicles.

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.*

Construction of buildings and facilities could involve demolition of existing structures and removal of construction debris, grading, and/or excavation of the site (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 during the LRDP planning horizon 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 (implemented under the 2005 LRDP) could overlap with current construction projects and create the potential for overall campus-related construction traffic that could result in localized impacts. As existing projects are completed, the construction-related traffic impacts

associated with those projects would cease; however, as new projects are approved and implemented, additional construction-related trips could result in 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 constrained nature of access to and from the campus (due to the existence of the I-215/SR-60 freeway and the number of residential streets in the campus vicinity) as a practical matter, three roadways (Blaine Street, University Avenue, and Martin Luther King Boulevard) would provide the primary access route for construction vehicles. Because the LRDP does not include specific projects, it would be speculative to identify which specific roadway segments or intersections could be affected by future construction projects. As a conservative assumption, it is assumed that the net effect of campus construction activities could result in localized traffic impacts in the vicinity of the campus. However, only some construction projects would have potentially significant intersection impacts, and this would depend on the relative size of the construction project. For instance, major new construction such as new on-campus housing would have a higher likelihood of resulting in construction impacts; whereas, smaller projects such as interior building remodels would have less of a likelihood to result in construction impacts.

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, and the need to accommodate the anticipated enrollment increases and program growth identified in the 2005 LRDP, construction vehicle traffic may still resulted in localized impacts.

Even with implementation of the existing campus Program and Practice, implementation of the 2005 LRDP would cause an increase in construction-related traffic that is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections), and this impact would be ***significant and unavoidable***.

Threshold	Would the project exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?

Impact 4.14-3 **Implementation of the 2005 LRDP would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program. This impact would be *significant and unavoidable.***

Implementation of the 2005 LRDP would result in an increase in campus trip generation, which would also increase traffic volumes on the highway network. As discussed in Section 4.14.2 (Existing Conditions) and shown in Table 4.14-6, the majority of I-215 currently operates at LOS E or worse during both the A.M. and P.M. peak hours, in the peak direction of travel (A.M.-northbound/P.M.-southbound). In addition, Highway 60 currently experiences occasional congestion west of the I-

215/SR-91, while the SR-91 segment west of the I-215/Highway 60 Interchange currently operates at LOS E or worse in both the A.M. and P.M. peak hours, eastbound and westbound. In light of the major freeway widening and interchange redesign that will be programmed on SR-60/SR-91/I-215 in the near future, portions of these highways within the project vicinity would continue to operate at LOS E or worse in both the A.M. and P.M. peak hours under the 2015 background traffic (without LRDP) conditions, as shown in Tables 4.14-15 and 4.14-16.

The Traffic Study for the proposed project conducted a freeway segment LOS analysis for the study freeway segments under the 2015 project traffic (with LRDP) conditions. The LOS analysis was conducted assuming Iowa Avenue, between University Avenue and Martin Luther King Boulevard, as both a two- and four-lane roadway. The two-lane scenario LOS summary is presented in Table 4.14-25 and the four-lane LOS summary is presented in Table 4.14-26.

Table 4.14-25 2015 Freeway Segment LOS Summary with LRDP with Two-Lane Iowa Avenue Section

Freeway Segment	*Peak Hour*	*2015 Background*			*2015 W/ Project*		
		Volume	*LOS*	*Delay (sec/veh)*	*Volume*	*LOS*	*Delay (sec/veh)*
I-215 NB, s/o 60	AM	4721	F0	1.22	4892	F1	1.27
	PM	3372	D	0.87	3553	D	0.92
I-215 SB s/o 60	AM	2641	B	0.46	2731	B	0.47
	PM	3991	C	0.69	4242	C	0.73
I-215 NB, b/w 60 & Central	AM	10484	F1	1.36	10865	F2	1.41
	PM	7353	E	0.95	7756	F	1.00
I-215 SB, b/w 60 & Central	AM	6161	C	0.64	6360	C	0.66
	PM	9292	E	0.96	9850	F0	1.02
I-215 NB, b/w Central & MLK	AM	10148	F1	1.31	10488	F2	1.36
	PM	7117	D	0.92	7478	E	0.97
I-215 SB, b/w Central & MLK	AM	5963	B	0.62	6143	C	0.64
	PM	8995	E	0.93	9492	E	0.98
I-215 NB, b/w MLK & University	AM	9829	F1	1.27	10374	F1	1.34
	PM	6929	D	0.90	7401	E	0.96
I-215 SB, b/w MLK & University	AM	5725	B	0.59	5952	B	0.62
	PM	8812	D	0.91	9520	E	0.99
I-215 NB, b/w University & 3rd	AM	9721	F3	1.46	9925	F3	1.49
	PM	6846	D	0.87	7026	D	0.90
I-215 SB, b/w University & 3rd	AM	5686	D	0.85	5796	D	0.87
	PM	8669	F0	1.11	8924	F0	1.14
I-215 NB, b/w 3rd & Spruce	AM	9880	F0	1.19	9936	F0	1.19
	PM	6928	C	0.71	7147	C	0.73
I-215 SB, b/w 3rd & Spruce	AM	5804	D	0.87	6004	D	0.90
	PM	8757	F0	1.12	8901	F0	1.14
I-215 NB, b/w Spruce & 91/60	AM	9813	F3	1.47	9869	F3	1.48
	PM	6881	D	0.88	7100	D	0.91

Table 4.14-25 2015 Freeway Segment LOS Summary with LRDP with Two-Lane Iowa Avenue Section

Freeway Segment	*Peak Hour*	*2015 Background*			*2015 W/ Project*		
		Volume	*LOS*	*Delay (sec/veh)*	*Volume*	*LOS*	*Delay (sec/veh)*
I-215 SB, b/w Spruce & 91/60	AM	5765	D	0.86	5965	D	0.89
	PM	8697	F0	1.11	8841	F0	1.13
I-215 NB, n/o 91/60	AM	7610	F1	1.30	7624	F1	1.30
	PM	5977	F0	1.02	6032	F0	1.03
I-215 SB, n/o 91/60	AM	5621	E	0.96	5671	E	0.97
	PM	7253	F0	1.24	7289	F0	1.24
60 EB, e/o 215	AM	6237	F3	1.60	6346	F3	1.63
	PM	3443	D	0.89	3750	E	0.96
60 WB, e/o 215	AM	4327	F0	1.11	4537	F0	1.17
	PM	7120	F3	1.83	7342	F3	1.89
60 EB, w/o 91/215	AM	3836	B	0.49	3906	B	0.50
	PM	6059	C	0.77	6109	C	0.78
60 WB, w/o 91/215	AM	6301	D	0.80	6321	D	0.81
	PM	4077	B	0.52	4154	B	0.53
91 EB, w/o 215/60	AM	6344	F0	1.08	6424	F0	1.09
	PM	7118	F0	1.21	7176	F0	1.22
91 WB, w/o 215/60	AM	6886	F0	1.17	6908	F0	1.18
	PM	6113	F0	1.04	6200	F0	1.06

Notes
s/o South of
n/o North of
w/o West of
e/o East of
b/w Between

Source: UC Riverside LRDP Traffic Impact Study 2004

Table 4.14-26 2015 Freeway Segment LOS Summary with LRDP with Alternative Four-Lane Iowa Avenue Section

Freeway Segment	*Peak Hour*	*2015 Background*			*2015 W/ Project*		
		Volume	*LOS*	*Delay (sec/veh)*	*Volume*	*LOS*	*Delay (sec/veh)*
I-215 NB, s/o 60	AM	4721	F0	1.22	4892	F1	1.27
	PM	3372	D	0.87	3553	D	0.92
I-215 SB s/o 60	AM	2641	B	0.46	2731	B	0.47
	PM	3991	C	0.69	4242	C	0.73
I-215 NB, b/w 60 & Central	AM	10484	F1	1.36	10865	F2	1.41
	PM	7353	E	0.95	7756	F	1.00
I-215 SB, b/w 60 & Central	AM	6161	C	0.64	6360	C	0.66
	PM	9292	E	0.96	9850	F0	1.02
I-215 NB, b/w Central & MLK	AM	10148	F1	1.31	10488	F2	1.36
	PM	7117	D	0.92	7478	E	0.97

Table 4.14-26 2015 Freeway Segment LOS Summary with LRDP with Alternative Four-Lane Iowa Avenue Section

Freeway Segment	*Peak Hour*	*2015 Background*			*2015 W/ Project*		
		Volume	*LOS*	*Delay (sec/veh)*	*Volume*	*LOS*	*Delay (sec/veh)*
I-215 SB, b/w Central & MLK	AM	5963	B	0.62	6143	C	0.64
	PM	8995	E	0.93	9492	E	0.98
I-215 NB, b/w MLK & University	AM	9829	F1	1.26	10240	F1	1.32
	PM	6929	D	0.88	7306	E	0.95
I-215 SB, b/w MLK & University	AM	5725	B	0.59	5952	B	0.62
	PM	8812	D	0.89	9295	E	0.96
I-215 NB, b/w University & 3rd	AM	9721	F2	1.45	9858	F3	1.48
	PM	6846	D	0.87	6966	D	0.89
I-215 SB, b/w University & 3rd	AM	5686	D	0.85	5796	D	0.87
	PM	8669	F0	1.10	8808	F0	1.12
I-215 NB, b/w 3rd & Spruce	AM	9880	F0	1.19	9936	F0	1.19
	PM	6928	C	0.71	7147	C	0.73
I-215 SB, b/w 3rd & Spruce	AM	5804	D	0.87	6004	D	0.90
	PM	8757	F0	1.12	8901	F0	1.14
I-215 NB, b/w Spruce & 91/60	AM	9813	F3	1.47	9869	F3	1.48
	PM	6881	D	0.88	7100	D	0.91
I-215 SB, b/w Spruce & 91/60	AM	5765	D	0.86	5965	D	0.89
	PM	8697	F0	1.11	8841	F0	1.13
I-215 NB, n/o 91/60	AM	7610	F1	1.30	7624	F1	1.30
	PM	5977	F0	1.02	6032	F0	1.03
I-215 SB, n/o 91/60	AM	5621	E	0.96	5671	E	0.97
	PM	7253	F0	1.24	7289	F0	1.24
60 EB, e/o 215	AM	6237	F3	1.60	6346	F3	1.63
	PM	3443	D	0.89	3750	E	0.96
60 WB, e/o 215	AM	4327	F0	1.11	4537	F0	1.17
	PM	7120	F3	1.83	7342	F3	1.89
60 EB, w/o 91/215	AM	3836	B	0.49	3906	B	0.50
	PM	6059	C	0.77	6109	C	0.78
60 WB, w/o 91/215	AM	6301	D	0.80	6321	D	0.81
	PM	4077	B	0.52	4154	B	0.53
91 EB, w/o 215/60	AM	6344	F0	1.08	6424	F0	1.09
	PM	7118	F0	1.21	7176	F0	1.22
91 WB, w/o 215/60	AM	6886	F0	1.17	6908	F0	1.18
	PM	6113	F0	1.04	6200	F0	1.06

Notes
s/o South of
n/o North of
w/o West of
e/o East of
b/w Between

Source: UC Riverside LRDP Traffic Impact Study 2004

As shown in Tables 4.14-25 and 4.14-26, the operating conditions of all freeway segments operating unacceptably under 2015 background traffic conditions would continue to do so with the addition of project traffic under both scenarios for the configuration of Iowa Avenue. The following locations would drop from LOS D to LOS E with the addition of project traffic, under the two- and four-lane scenarios for Iowa Avenue:

- The segment of Interstate 215, between Martin Luther King Boulevard and University Avenue, would operate unacceptably in the northbound and southbound directions during the P.M. peak hour with the addition of project traffic. Without and with project traffic, the segment would operate unacceptably in the northbound direction during the A.M. peak hour.
- The segment of Highway 60, east of Interstate 215, would operate unacceptably in the eastbound direction during the P.M. peak hour with the addition of project traffic. Without and with project traffic, the segment would operate unacceptably in the westbound direction during the A.M. and P.M. peak hours. Without and with project traffic, the segment would operate unacceptably in the eastbound direction during the A.M. peak hour.

Therefore, in addition to all the freeway segments that would operate unacceptably under 2015 background traffic conditions, implementation of the 2005 LRDP would also result in unacceptable LOS conditions on the segment of Interstate 215, between Martin Luther King Boulevard and University Avenue, and the segment of Highway 60, east of Interstate 215. Further improvements would require additional ROW acquisition. Improvements beyond those already identified are unplanned and unfunded, and thus cannot be anticipated to occur at this time. As these freeway segments would operate unacceptably in light of the freeway widening and interchange redesign planned for the SR-60/SR-91/I-215, this impact would be ***significant and unavoidable***.

Threshold	Would the project substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Impact 4.14-4 **Implementation of the 2005 LRDP would not result in hazards due to design features or land use incompatibilities. With implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. As the 2005 LRDP is implemented, new buildings and parking facilities would be constructed, and new roadway segments developed, particularly on the West Campus.

During the planning horizon of the 2005 LRDP, the campus will continue implementation of the following existing campus Program and Practice (PP) related to parking and roadway design.

PP 4.14-4 *The campus shall provide design architects 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.*

It is anticipated that any new roadway segments 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.

The 2005 LRDP proposes to accommodate enrollment growth and academic program requirements within the existing boundaries of the UCR campus, and provide approximately 7.1 million gsf of new buildings and facilities. On the East Campus, this would include infill development in the academic core, expansion of the academic core, new housing and redevelopment of existing housing sites, new recreational facilities, new parking facilities and preservation of open space. On the West Campus, new academic, housing, recreation, support, parking, and open space would be developed in the area north of Martin Luther King Boulevard. As discussed in Impact 4.9-1 (in Section 4.9, Land Use) implementation of the 2005 LRDP 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 would reduce the amount of agricultural teaching and research fields on the West Campus by approximately 125 acres. LRDP Planning Strategy *Land Use 3*, described more fully in Section 4.2, would maintain the teaching and research fields south of Martin Luther King Boulevard. As agricultural operations would be concentrated on the West Campus south of Martin Luther King Boulevard, 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 the existing campus Programs and Practices, implementation of the 2005 LRDP 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*.

Impact 4.14-5 **2005 LRDP construction could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus. Construction activity could require the short-term closure of traffic lanes or roadway segments, which could result in short-term traffic hazards.

During the planning horizon of the 2005 LRDP, continued implementation of PP 4.14-4 (see above) and the following campus Program and Practice (PP) related to temporary roadway closures would occur

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.

(This is identical to Hazards and Hazardous Materials PP 4.7-7(a).)

Construction activities during implementation of the 2005 LRDP 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. 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.

With continued implementation of existing campus Programs and Practices, construction activities during implementation of the 2005 LRDP would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses because the campus would maintain at least one unobstructed lane in both directions on campus roadways where feasible or would provide appropriate traffic controls to allow travel in both directions. This impact would be *less than significant*.

Impact 4.14-6 **2005 LRDP construction would not substantially increase pedestrian hazards due to closure of sidewalks or paths. With implementation of the relevant Program and Practice, this impact would be *less than significant*.**

Construction activities during implementation of the 2005 LRDP could result in temporary closure of on-campus pedestrian sidewalks and paths or the provision of temporary pedestrian routes. The arrival or departure of construction vehicles and delivery of construction materials could intermittently disrupt pedestrian travel along pedestrian routes adjacent to construction sites.

During the planning horizon of the 2005 LRDP, continued implementation of the following existing campus Programs and Practices related to pedestrian route closures would occur.

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 Program and Practice, construction activities during implementation of the 2005 LRDP would not substantially increase pedestrian hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., construction equipment), and this impact would be *less than significant*.

Threshold	Would the project result in inadequate emergency access?

Impact 4.14-7 **Implementation of the 2005 LRDP would not impair emergency access in the long-term. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. As the 2005 LRDP is implemented, new buildings and parking facilities would be constructed, and new roadway segments developed, particularly on the West Campus.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including LRDP Planning Strategy *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. Thus, implementation of the 2005 LRDP will not restrict access to the campus for emergency vehicles and services and disabled access.

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. The increase in campus population would increase the demand for parking, and the utilization of additional parking spaces would generate additional vehicle trips compared to existing conditions. The increase in campus-related vehicle trip generation would increase traffic volumes on the local street and regional highway network, which could degrade intersection levels of service. As discussed above under Impact 4.14-1, this increase in vehicle trips would result in significant impacts at 12 of the 36 study intersections under the 2-lane Iowa Avenue scenario or 10 of the 36 study intersections under the 4-lane Iowa Avenue scenario. Feasible mitigation has been identified to reduce these impacts to a less-than-significant level at all intersections. However, unless and until the City of Riverside implements the identified mitigation measures under their jurisdiction, impacts at all 12 intersections under the two-lane Iowa Avenue scenario, or at all 10 intersections under the four-lane Iowa Avenue scenario, would remain significant and unavoidable. Even without implementation of the identified mitigation measures, most of the impacted intersections would operate at Level of Service "D" or "E," and traffic conditions would continue to operate at levels that are below the theoretical design capacity of the roadways. On these road segments, emergency vehicles will be able to traverse these roadways and intersections relatively unimpacted. Even for those intersections where the future LOS would be at level "F," traffic would continue to move along those roadways, albeit with significant delays. In other major jurisdictions where traffic conditions are severely congested, emergency vehicles can, and do, traverse such roadways, generally by requiring vehicles to move over in order for the emergency vehicles to pass through. On some limited occasions, because of extended congestion, emergency vehicles may be required to cross opposing traffic lanes (e.g., to travel

westbound in eastbound traffic lanes), use the median, or a bicycle lane, to get around congested road segments or intersections. Thus, emergency vehicles are not anticipated to experience any substantial delays as a result of the significant traffic impacts that could occur at some intersections as a result of implementation of the 2005 LRDP.

In addition, as described above under Impact 4.14-4, implementation of the 2005 LRDP would not result in hazards due to design features or land use incompatibilities, which could impair emergency access, or as described above under Impact 4.14-5, as a result of construction activities.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not result in inadequate emergency access, and this impact would be *less than significant*.

Impact 4.14-8 **2005 LRDP construction could impair emergency access during the short-term. With implementation of the relevant Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in development of approximately 7.1 million gsf of new academic and support facilities on the UCR campus. Construction activity could require the closure of traffic lanes or roadway segments, which could result in impaired emergency access in the short-term.

During the planning horizon of the 2005 LRDP, continued implementation of the existing campus Program and Practice PP 4.14-5, described above under Impact 4.14-5, and the following Program and Practice is relevant to temporary road closures.

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.*

(This is identical to Hazards and Hazardous Materials PP 4.7-7(a).)

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

(This is identical to Hazards and Hazardous Materials PP 4.7-7(b).)

Construction associated with development under the 2005 LRDP could potentially affect emergency response due to temporary construction barricades or other obstructions that could impede emergency access on campus. Continued implementation 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.

With continued implementation of existing campus Programs and Practices, construction activities during implementation of the 2005 LRDP would not impede emergency access, and this impact would be *less than significant*.

Threshold	Would the project result in inadequate parking capacity?

Impact 4.14-9 **Implementation of the 2005 LRDP would not result in inadequate parking capacity. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. The increase in campus population would result in an increased demand for parking.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including *Land Use 4* (pursue a goal of housing 50 percent of student enrollment in campus-controlled housing), *Land Use 7* (relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate), *Transportation 1* (develop an integrated multi-modal transportation plan to encourage walking, carpool and vanpool, biking and transit use), *Transportation* 2 (expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses), *Transportation 3* (provide a continuous network of bicycle lanes and paths throughout the campus), *Transportation* 5 (provide bicycle parking at convenient locations), and *Transportation* 6 (implement parking management measures that may include, restricted permit availability, restricted permit mobility, and differential permit pricing).

In addition, continued implementation of existing PP 4.14-1, described above result in continued implementation of Transportation Demand Management program that that meets or exceeds all trip reduction and AVR requirements of the SCAQMD, which would, in turn reduce campus parking demand.

The 2005 LRDP proposes to expand the availability of parking through the development of parking structures on the perimeter of the academic core, which could increase the supply of parking from the current 8,832 spaces, similar to all proposed development, to a future total of approximately 15,868 spaces. The precise number of future spaces will depend upon the demand for such parking and the availability of funds to construct the additional parking.

With approximately 8,832 spaces and a campus population of approximately 17,641 persons, the current supply of parking results in ratio of 0.5 parking space per person. As discussed in Section 4.10 (Population and Housing) implementation of the 2005 LRDP would increase the campus population from approximately 17,641 students, faculty, staff and other individuals to a future total of approximately 35,540 persons, an increase of approximately 17,899 persons. With a future campus parking supply of approximately 15,868 spaces and a campus population of 35,540 persons, this ratio

would decline slightly to approximately 0.44 spaces per person. Despite this slight decline in overall parking availability, the range of LRDP Planning Strategies, most notably the substantial expansion of on-campus housing, the expansion of campus shuttle systems and the development of a network of bicycle paths should reduce parking demand for on-campus residents, and reduce the need for students, faculty and staff to utilize single-occupant vehicles to travel from one portion of the campus to another. Further, the approximate doubling of the campus population will require a substantial expansion of the campus existing TDM (or Alternate Transportation) program to maintain compliance with SCAQMD trip reduction and AVR requirements.

With implementation of the identified LRDP Planning Strategies and continued implementation of the existing campus Program and Practice, implementation of the 2005 LRDP would not result in inadequate parking supply, and this impact would be *less than significant*.

Impact 4.14-10 **Implementation of the 2005 LRDP would increase demand for parking in areas adjacent to the campus. With implementation of the relevant 2005 LRDP Planning Strategies and Mitigation Measures, this potentially significant impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. The increase in campus population would result in an increased demand for parking in areas adjacent to the campus.

As discussed in Impact 4.14-9 above, during the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including *Land Use 4* (pursue a goal of housing 50 percent of student enrollment in on-campus or campus-controlled housing), *Land Use 7* (relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate), *Transportation 1* (develop an integrated multi-modal transportation plan to encourage walking, biking and transit use), *Transportation* 2 (expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses), *Transportation 3* (provide a continuous network of bicycle lanes and paths throughout the campus), *Transportation* 5 (provide bicycle parking at convenient locations), and *Transportation* 6 (implement parking management measures that may include, restricted permit availability, restricted permit mobility, and differential permit pricing).

As part of LRDP Planning Strategy *Land Use 7,* surface parking would be replaced with structures, where appropriate. The construction of parking structures will require increases in parking permit fees to cover the cost of construction and operation of new parking structures. In addition, per LRDP Planning Strategy *Transportation* 5, the campus may restrict permit availability, restrict permit mobility, and implement differential permit pricing. Thus, parking permits are likely to become more expensive and less convenient and/or appealing for some members of the campus population. As a result, unrestricted "free" parking in areas adjacent to the campus may become more attractive to some members of the

campus population, such as commuters, resident students that do not wish to purchase a parking permit, or other persons who may believe the cost of on-campus parking is too high.

Because the precise cost of future parking permits, or the propensity of students or others to seek lower, or "no cost" parking options cannot be estimated, any calculation of future off-campus parking demand would be speculative. However, given experience at other college and university campuses (including Riverside City College), it is likely that the demand for off-campus parking near the campus, including residential neighborhoods, could increase as a result of implementation of the 2005 LRDP.

MM 4.14-10 would require the campus to work with the City of Riverside to monitor off-campus parking and implement appropriate measures to assure adequate parking supply for residents and commercial establishments.

MM 4.14-10(a) — *The campus shall work with the City of Riverside to monitor the demand for off-campus parking in residential neighborhoods or at commercial establishments to determine whether use of off-campus parking by the campus population is substantially restricting availability for neighborhood residents or patrons of commercial establishments*

MM 4.14-10(b) — *If the campus and the City of Riverside mutually determine that use of off-campus parking by members of the campus population has substantially restricted availability to residents and patrons of commercial establishments, the campus and the City will work cooperatively to implement appropriate measures, which may include, but not be limited to*

(i) Increased enforcement of existing parking regulations

(ii) Changes in parking regulations (e.g., time restrictions for on-street parking)

(iii) A permit parking program for affected residential neighborhoods and/or commercial facilities.

With implementation of MM 4.14-10(a) and MM 4.14-10(b), implementation of the 2005 LRDP would not result in inadequate parking capacity in areas near the campus, and this impact would be *less than significant*.

Impact 4.14-11 **Construction of new facilities could result in temporary elimination of on-campus parking spaces and could require additional temporary parking for construction workers. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measure, this potentially significant impact would be reduced to a *less-than-significant* level.**

During the planning horizon of the 2005 LRDP, construction of new structures could result in elimination of parking spaces in existing parking lots to provide a site for the new building, to provide access to the construction site or space for staging of construction materials. In addition, construction employees would contribute to parking demand.

As discussed in Impact 4.14-9 above, during the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including *Land Use 7* (relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate) which would promote expansion of the campus parking supply to replace spaces lost due to construction.

With respect to parking for construction employees, typically, some on-site parking spaces are available for construction employees; however, future construction in some areas will probably limit this practice due to site constraints. Thus, parking for construction employees is also provided within existing on-campus visitor parking facilities. The current number of construction workers on campus is estimated at approximately 125 per day (worst case scenario), and this number could increase to approximately 220 per day during the LRDP planning horizon, depending on the pace and extent of future construction. As current construction projects are completed (e.g., Physical Sciences 1, Engineering II, and ongoing seismic renovations) those spaces currently used for construction employees would become available to accommodate the demand for future construction projects. However, at times, the combined effect of construction worker parking demand and the loss of parking spaces (for construction site access or material storage) could result in a net increase in construction-related parking demand that exceeds the historical average or available supply.

MM 4.14-11 would ensure that impacts associated with parking for construction workers will be reduced to a less-than-significant level:

MM 4.14-11 *If on-campus parking is not available, off-site construction worker parking shall be provided with shuttle service to the remote parking location.*

With implementation of MM 4.14-11, construction during implementation of the 2005 LRDP would not result in inadequate parking supply, and this impact would be *less than significant*.

Threshold	Would the project conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?

Impact 4.14-12 **Implementation of the 2005 LRDP would not conflict with applicable policies, plans, or programs supporting alternative transportation. With implementation of the relevant 2005 LRDP Planning Strategies and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. The increase in campus population would result in an increased demand for parking and the generation of additional vehicle trips.

As discussed in Impact 4.14-9 above, during the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS), including *Land Use 4* (pursue a goal of housing 50 percent of student enrollment in on-campus or campus-

controlled housing), *Land Use 7* (relocate parking from central campus locations to the periphery of the academic core and replace surface parking with structures, where appropriate), *Transportation 1* (develop an integrated multi-modal transportation plan to encourage walking, biking and transit use), *Transportation* 2 (expand shuttle or tram service connecting major parking lots and campus destinations, and linking the East and West Campuses), *Transportation 3* (provide a continuous network of bicycle lanes and paths throughout the campus), *Transportation* 5 (provide bicycle parking at convenient locations), and *Transportation* 6 (implement parking management measures that may include, restricted permit availability, restricted permit mobility, and differential permit pricing).

In addition, as noted above in Impact 4.14-1, the campus would continue to implement 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, and which may be subject to modification as new technologies are developed or alternate program elements are found to be more effective.

With implementation of the identified LRDP Planning Strategies and the existing campus Program and Practice, implementation of the 2005 LRDP would not conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks), and this impact would be *less than significant*.

Impact 4.14-13 **Implementation of the 2005 LRDP would increase demand for public transit. With implementation of the relevant 2005 LRDP Planning Strategy, Program and Practice, and Mitigation Measure, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in an increase in student enrollment, the employment of additional faculty and staff, and an increase in visitors to campus. As discussed in Section 4.11 (Population and Housing), the increase in on-campus housing would absorb the increased student population growth in the City. However, the increase in campus population, specifically, the increase in campus-affiliated population, would result in an increased demand for public transit.

As discussed above under Impact 4.14-1 and Impact 4.14-12, during the planning horizon of the 2005 LRDP, 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 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.

In May 2003, RTA completed the largest service expansion to date, which included the addition of four new routes and changes to 24 existing routes. Route realignments, throughout the County, increased trip frequencies and added more stops. As discussed in RTA's 2003 Annual Report, more students than ever are riding RTA, and RTA recognizes that all five institutions that are included in the service area,

including UCR, continue to grow and heighten the demand for services. The extension of Measures A and the passing of the Transportation Uniform Mitigation Fee (TUMF) in 2003 allow Riverside County to move forward on critical road and transit projects, allowing the region to maintain mobility in the coming years. In addition, beginning in September 2004, a multi-facetted program between Metrolink, Amtrak, and Caltrans will allow southern Californians more train travel options. Under the new Rail 2 Rail program, Amtrak and Metrolink will accept certain tickets issued from each of their respective rail services.

These recent improvements would ensure demand from the campus would be met. In addition, transit service providers based upon demand occasionally adjust service levels as demand warrants. MM 4.14-13 would ensure that the campus work with service providers to provide adequate public transit service to the UCR campus.

MM 4.14-13 *As part of the Multi-modal Transportation Program, the UCR Transportation and Parking Services department will work with transit service providers on an annual basis to monitor demand for transit services, to identify needed service improvements, and encourage the implementation of any such improvements.*

With implementation of the Planning Strategy, the Program and Practice, and MM 4.14-13, in increased demand for public transit would be reduced to *less than significant*.

4.14.5 Cumulative Impacts

The geographic context for the analysis of cumulative transportation/traffic impacts includes the list of off-campus related projects and other future development within the general boundaries of the City of Riverside (included on Table 4.0-2). In addition, cumulative impacts are based on the future traffic volumes estimated from SCAG Model Socio-Economic Data for the traffic analysis zones (TAZ) in the campus vicinity, which reflects population and socio-economic projections for the entire five-county region covered by SCAG.

The analysis of future intersection levels of service discussed above in the project-specific analysis identifies future conditions without the 2005 LRDP in year 2015 and future conditions with 2005 LRDP in year 2015. This analysis therefore captures the future growth from related projects and population and socio-economic projections for the area. The analysis concludes that cumulative traffic growth during the regular session, even without implementation of the 2005 LRDP and/or approval of any new projects at UCR, could result in increases in traffic volumes that could be cumulatively considerable at nine of the study intersections under the two-lane Iowa Avenue scenario and seven intersections under the four-lane Iowa Avenue scenario (refer to Table 4.14-19 and Table 4.14-20).

Under the two-lane Iowa Avenue scenario, intersections that would be significantly affected without the LRDP are as follows:

1. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS E in the P.M. peak hour.

2. The signalized intersection of University Avenue/Chicago Avenue would operate at LOS E in the P.M. peak hour.
3. The signalized intersection of Martin Luther King Boulevard/Chicago Avenue would operate at LOS E in the P.M. peak hour.
4. The signalized intersection of Martin Luther King Boulevard/Canyon Crest would operate at LOS F in the P.M. peak hour.
5. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS E in the P.M. peak hour.
6. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
7. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
8. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F in the A.M. peak hour.
9. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

Under the four-lane Iowa Avenue scenario, intersections that would be significantly affected are as follows (refer to Table 4.14-22 and Table 4.14-23):

1. The signalized intersection of Blaine Street/Iowa Avenue would operate at LOS E in the P.M. peak hour.
2. The signalized intersection of Martin Luther King Boulevard/Canyon Crest would operate at LOS F in the P.M. peak hour.
3. The signalized intersection of Central Avenue/Canyon Crest Drive would operate at LOS E in the P.M. peak hour.
4. The signalized intersection of Central Avenue/Box Springs Boulevard would operate at LOS E in the P.M. peak hour.
5. The stop-controlled intersection of Big Springs Road/Watkins Drive would operate at LOS E and F in the A.M. and P.M. peak hours, respectively.
6. The stop-controlled westbound approach on Le Conte Drive at its intersection with Chicago Avenue would operate at LOS F in the A.M. peak hour.
7. The stop-controlled northbound I-215 off-ramp at Central Avenue would operate at LOS F during the A.M. and P.M. peak hours.

With implementation of the 2005 LRDP, the number of campus-related vehicle trips would increase by approximately 53,582 average daily trips compared to future "without project" conditions. This increase in average daily trips would contribute to the cumulative increases in traffic on local streets, as shown in Table 4.14-19 and Table 4.14-20 for the two-lane Iowa Avenue scenario, and Table 4.14-22 and Table 4.14-23 for the four-lane Iowa Avenue scenario. With implementation of the 2005 LRDP,

increases in traffic volumes from areawide growth plus the 2005 LRDP could be cumulatively considerable at a total of 12 intersections under the two-lane Iowa Avenue scenario, and at a total of 10 intersections under the four-lane Iowa Avenue scenario.

Under the two-lane Iowa Avenue scenario, three additional study intersections would be significantly impacted in addition to those impacted under the "without project" conditions, and impacts would occur in the P.M. peak hour. Those additional intersections are

- 3rd St./Chicago Ave. (D to E in P.M.)
- University Ave./Iowa Ave. (D to E in P.M.)
- Linden St./Aberdeen Drive (B to E in P.M.)

With implementation of the improvements identified under the Methodology section and Impact 4.14-1, above, future traffic conditions would operate at LOS D or better at all intersections. However, off-campus signal and physical intersection improvements are beyond the jurisdiction of The Regents to implement at 10 out of the 12 intersections (impacts at Martin Luther King Boulevard/Canyon Crest Linden St./Aberdeen Drive would be mitigable). Impacts at all 10 other intersections could remain cumulatively considerable. The contribution of the 2005 LRDP to this impact would be cumulatively considerable.

Under the four-lane Iowa Avenue scenario, three additional study intersections would be significantly impacted in addition to those impacted under the "without project" conditions, and impacts would occur in the P.M. peak hour. Those additional intersections are

- University Ave./Iowa Ave. (D to F in P.M.)
- Martin Luther King Blvd./Chicago Ave. (D to E in P.M.)
- Linden St./Aberdeen Dr. (B to E in P.M.)

With implementation of the improvements identified under the Methodology section and Impact 4.14-1, above, future traffic conditions would operate at LOS D or better at all intersections with the four-lane scenario. However, off-campus signal and physical intersection improvements are beyond the jurisdiction of The Regents to implement at eight out of 10 intersections (impacts at Martin Luther King Boulevard/Canyon Crest Linden St./Aberdeen Drive would be mitigable). Impacts at all eight other intersections could remain cumulatively considerable. The contribution of the 2005 LRDP to this impact would be cumulatively considerable.

It is expected that construction of the related projects and other future development during the timeframe of the 2005 LRDP would result in periods of heavy truck traffic off-campus as a result of the delivery of construction materials and equipment and the hauling of demolition waste and earth materials. Although the timeframe for construction of these projects is uncertain (as well as the degree to which construction of these projects will overlap among themselves and the locations at which impacts could occur), it is likely that construction and hauling activity associated with these future projects will significantly affect road segments and intersections, resulting in a cumulatively considerable impact. In particular, construction vehicles associated with the related projects identified in Table 4.0-2 and

Figure 4.0-1 would use many of the same truck routes as construction vehicles accessing the campus. Due to the potential overlap between the 2005 LRDP construction and other current and future campus construction projects, it was conservatively assumed that the net effect of campus construction activities could result in localized traffic impacts in the vicinity of campus. Consequently, cumulatively considerable impacts may occur from time to time during the construction of the 2005 LRDP projects in conjunction with related development. While the exact contribution of the 2005 LRDP to cumulative construction-related traffic impacts would be impossible to quantify, and will vary on a periodic basis, it is anticipated that at times the contribution of the 2005 LRDP to impacts would be cumulatively considerable.

By its nature, the Riverside County Congestion Management Program (CMP) is a cumulative scenario that considers the impact of single projects in the context of cumulative traffic demand on CMP roadways. With implementation of the major freeway widening and interchange redesign for the SR-60/SR-91/I-215 freeways, portions of these highways within the project vicinity would continue to operate at LOS E or worse in both the A.M. and P.M. peak hours under the 2015 background traffic (without LRDP) conditions. Operating conditions of all freeway segments that would operate unacceptably under 2015 background traffic conditions would continue to do so with the addition of project traffic under both scenarios for the configuration of Iowa Avenue. Two additional locations would drop from LOS D to LOS E with the addition of project traffic, under the two- and four-lane scenarios for Iowa Avenue:

- The segment of Interstate 215, between Martin Luther King Boulevard and University Avenue, would operate unacceptably in the northbound and southbound directions during the P.M. peak hour with the addition of project traffic. Without and with project traffic, the segment would operate unacceptably in the northbound direction during the A.M. peak hour.
- The segment of Highway 60, east of Interstate 215, would operate unacceptably in the eastbound direction during the P.M. peak hour with the addition of project traffic. Without and with project traffic, the segment would operate unacceptably in the westbound direction during the A.M. and P.M. peak hours. Without and with project traffic, the segment would operate unacceptably in the eastbound direction during the A.M. peak hour.

Since the freeway segments would operate unacceptably in light of the freeway widening and interchange redesign planned for the SR-60/SR-91/I-215, this impact would be cumulatively considerable.

It is anticipated that future development of the related projects and other future development would be required to adhere to standard engineering practices and requirements and would be subject to planning and design review by the City of Riverside to avoid traffic hazards created by design features and land use incompatibilities. For this reason, and because such impacts (if and where they occur) are relatively site specific, impacts associated with such traffic hazards would not be cumulatively considerable. As discussed under Impact 4.14-4, the 2005 LRDP would not result in hazards due to design features or land use incompatibilities. For this reason, the contribution of the 2005 LRDP to any cumulative impacts from traffic hazards would not be considerable.

Localized pedestrian hazards could occur due to related project construction. However, due to the dispersed location of future development and the anticipation that the related projects will be required to implement safety and access measures during construction (in accordance with City of Riverside requirements), impacts associated with vehicular and pedestrian hazards during construction would not be cumulatively considerable. Impact 4.14-5 and Impact 4.14-6 discuss the potential of the 2005 LRDP to increase vehicular or pedestrian hazards as a result of the closure of traffic lanes, roadway segments, or sidewalks. As indicated, the campus follows programs and practices (PP 4.14-5 and PP 4.14-6) to maintain safety and accessibility during construction periods. As a result, these potential impacts, which are localized at the area of construction activity, will remain less than significant, such that the 2005 LRDP's contribution to cumulative impacts would not be considerable.

It is anticipated that construction and operation of the off-campus related projects (and other future growth in the area during the 2005 LRDP planning horizon) will generate additional traffic on surface streets and intersections in the area and will, from time to time, result in lane closures and other temporary constraints to access. However, as discussed above, operational traffic associated with the related projects and future growth in general is captured within the assumptions that form the future "without project" traffic volumes utilized in this EIR and which represent an incremental change over existing conditions. Future levels of traffic associated with the related projects would not result in a significant impairment of emergency access. Even for those intersections where the future LOS would be at level "F," traffic would continue to move along those roadways, albeit with significant delays. In other major jurisdictions where traffic conditions are severely congested, emergency vehicles can, and do, traverse such roadways, generally by requiring vehicles to move over in order for the emergency vehicles to pass through. Impacts from closure due to construction of the related projects and other future projects (like those associated with the 2005 LRDP) are relatively site-specific, and, thus, it is not the construction of the related projects would not have a cumulative effect above and beyond the immediate effects of this construction at the location in question. For these reasons, the impact of the related projects on emergency access would not be cumulatively considerable. As discussed in Impact 4.14-7 and Impact 4.14-8 the 2005 LRDP will not result in inadequate emergency access. For these reasons, the contribution of the 2005 LRDP cumulative impacts on emergency access would not be cumulatively considerable.

Under the City of Riverside Zoning Code, the off-campus related projects and other future development would be required to provide adequate on-site (off-street) parking as a condition of development approval in order to minimize impacts to the parking supply. In addition, related projects are generally located at a distance from one another (and far enough from the UCR campus) to reduce the potential for parking shortages at one location from having an effect elsewhere. It is further anticipated that on-site parking at many of the related project sites, particularly those located immediately adjacent to the campus, will continue to be regulated by monthly permit sales and user fees (generally limited to building tenants and visitors), validation by merchants and other businesses, and physical barriers such as gates. For these reasons, impacts on parking are not anticipated to be cumulatively considerable. These requirements would ensure that future development would not have a cumulatively considerable effect on parking supply and demand in the area. As discussed under Impact 4.14-9 and Impact 4.14-10, UCR

will continue to provide adequate on-campus parking to satisfy student, faculty, and visitor demand. In addition, UCR will continue to provide and support alternative transportation to reduce vehicle trips to campus and to increase on-campus student housing to reduce the number of commuters to campus. For these reasons, the contribution of the 2005 LRDP to parking supply impacts would not be cumulatively considerable.

In accordance with City of Riverside requirements, it is anticipated that related projects and other future development will either accommodate construction worker parking on site or through other suitable means to reduce impacts on surrounding parking facilities. This would ensure that cumulative demands from parking for construction workers would not be compounded by related projects. Parking effects from cumulative construction activity associated with the related projects would not be cumulatively considerable. As discussed under Impact 4.14-11, the 2005 LRDP will not result in significant impacts due to the elimination of parking spaces necessary to accommodate construction activity and construction workers for on-campus procedures. As required by MM 4.14-11, off-campus parking for construction workers, with shuttle service, will be provided, if necessary. For this reason, construction activity as a result of the 2005 LRDP will not significantly displace other users of on-campus parking and will not create significant impacts to off-campus parking facilities. Consequently, the contribution of the 2005 LRDP to cumulative impacts associated with construction worker parking would not be cumulatively considerable.

It is anticipated that development associated with the related projects and other future development will result in an increased demand on alternative transportation, although due to the locations of the various related projects, it is expected that cumulative increases in demand will be distributed among the various bus routes that serve the area. As discussed in Impact 4.14-13, RTA's recent service expansion improvements increased trip frequencies and added more stops. In addition, the critical extension of Measures A and the passing of the Transportation Uniform Mitigation Fee (TUMF) in 2003 allow Riverside County to move forward on critical road and transit projects, allowing the region to maintain mobility in the coming years and enhance the County's transportation grid. These improvements will serve transit demands associated with related project development. While it is possible that ridership demand on a particular bus route associated with future development could be significant when compared to existing conditions, it can generally be expected that impacts on bus service will not be cumulatively considerable as a whole. Impacts of the 2005 LRDP on alternative transportation would be less than significant. As a result, the contribution of the 2005 LRDP to such cumulative impacts on alternative transportation as might occur in the future would not be considerable.

4.14.6 References

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Southern California Association of Governments (SCAG). 1996. *Regional Comprehensive Plan and Guide*, March.

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4.15 UTILITIES

4.15.1 Introduction

This section of the EIR evaluates the effects on the following utilities and service systems: domestic water supply, wastewater, solid waste disposal, electricity, and natural gas. Stormwater drainage facilities are discussed in Section 4.8 (Hydrology and Water Quality). This section analyzes the potential for implementation of the 2005 LRDP to exceed wastewater treatment requirements of the Regional Water Quality Control Board; require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities; result in solid waste generation which would exceed the permitted capacity of demand local or regional landfills; comply with applicable federal, State, and local statutes and regulations related to solid waste; result in wasteful, inefficient or unnecessary consumption of energy. The adequacy of water systems to meet fire flow requirements is discussed as part of fire protection in Section 4.12 (Public Services). This section focuses on increased demands on utilities on the campus. Off-campus population growth in the city and other off-campus areas would generally be served by existing development. No off-campus residential development is proposed. As new residential projects are proposed to meet overall population growth in the area, project-specific evaluation would evaluate effects of these projects on utilities.

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 the proposed development. Previous environmental documentation prepared for the UCR campus, including the 1990 LRDP EIR, was also used in the preparation of this section. Bibliographic entries for reference materials appear in Section 4.15.6 (References) of this section.

Two comment letters related to utilities were received on the Notice of Preparation circulated for the project. One comment letter provided typical natural gas demand use for residential development for use in the EIR. The other comment letter stated that the EIR must address off-campus impacts to utilities from increased campus growth and student enrollment. The Notice of Preparation, comments on the Notice of Preparation, a summary of issues raised in consultations with selected agencies, and a summary of issues raised at the Public Scoping meeting are included in Appendix A.

4.15.2 Existing Conditions

Domestic Water

The City of Riverside supplies domestic water to UCR. The City's water supply begins as pure rain and snow that is naturally filtered through the sand and gravel of the Bunker Hill, Riverside North, and Riverside South groundwater basins. This water is then tapped for domestic use by 48 wells operated by Riverside Public Utilities. Imported water is purchased from the Metropolitan Water District (MWD) during periods of peak use in the summer. In 2000, Riverside met 99.6 percent of its water needs from underground resources, receiving only 0.4 percent from MWD through the Western Municipal Water

District. The City water system was established in 1913 and serves a service area population of 259,738 persons over 74 square miles.

The system consists of 889 miles of pipelines, 12 miles of canals, and 16 active reservoirs. Total reservoir capacity is 100.4 million gallons. Daily average production is 71.8 million gallons, with peak day production of 99.9 million gallons and historical peak of 101.9 million gallons. Riverside Public Utilities currently operates two water treatment plants. Two additional treatment plants are in the design process and scheduled to become operational. Construction began in the fall of 2000 to install pipelines in the north Riverside area, thereby increasing the overall supply of water to Riverside and providing better water quality protection to the area.

On January 1, 2002, a new law, Senate Bill 610 (SB 610), took effect. SB 610, which has been 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. The proposed project does not meet any of the specific criteria set forth in Water Code section 10912(a)(1)–(6) requiring the preparation of a WSA. Moreover, this section of the Water Code applies to municipalities, and not state entities such as the University of California. The City has prepared a Water Supply Assessment for informational purposes for this project, as this represents a reasonable analytical approach to determining water availability to serve the Campus. The WSA for this project is attached as Appendix I of this document.

All water supply entitlements, water rights, and/or water service contracts that may be used to serve the project are set forth in the City of Riverside Urban Water Management Plan (UWMP), and summarized in Table 4.15-1, below.

Much of the City's water supply comes from the Bunker Hill Groundwater Basin in San Bernardino County. The Bunker Hill Basin is adjudicated. Under the Judgment entered for the Bunker Hill Basin, the City is entitled to take up to 49,542 acre-feet of water annually. This number reflects the City's portion of the water rights in this basin (up to 22,299 acre-feet), plus (1) the amount of water rights formerly exercised by the Gage Canal Company that the City acquired by virtue of its acquisition of the stock of this company (up to 13,213 acre-feet) and (2) the amount of irrigation water that the City exchanges with Gage Canal Company for potable groundwater drawn from the basin (up to 14,030 acre-feet). Additional rights are based on City ownership of stock in the Meeks & Daley and Riverside Highland water companies.

The City also has a right to withdraw water from the Riverside groundwater basin. Water from this basin is withdrawn through several methods, as identified in Table 4.15-1 above. The City is in the process of upgrading the existing system to improve water quality and increase supply, in addition to increasing the supply of recycled water.

Table 4.15-1 City of Riverside Water Supply

Water Source	*Quantity (in acre-feet per year)*
Bunker Hill Groundwater Basin	
Rights based on Judgment entered for the Basin	49,542
Rights based on City stock in Meeks & Daley and Riverside Highland Water Co.	3,816
Riverside Groundwater Basin	
North Basin	8,000[a]
Domestic wells	12,000–22,500[b]
Irrigation supply	7,000
Additional wells and treatment facilities, anticipated availability 2010	10,000
State Water Project	400
Recycled Water	2,000 by 2005, 10,000 by 2015
Seven Oaks Dam—application submitted for appropriation permits to divert and store water	5,590

Source: Water Supply Assessment for the University of California, Riverside Proposed 2003 Long Range Development Plan, City of Riverside. See Appendix I.

[a] Average domestic water supply estimate. From 1989 through 2001, the City's production from the Riverside North basin exceeded 8,000 acre-feet in four of the 12 years.

[b] Based on existing domestic water production with the addition of treatment plant construction to eliminate water quality constraints.

The UWMP indicates that the demand for water within the City's service area was 87,719 acre-feet per year (AFY)[27] in 2000 and is anticipated to reach 92,283 AFY by 2005. Thus, the City anticipates a 4,564 acre-feet increase in demand between 2000 and 2005, which suggests an average increase in demand of 912.8 AFY per year. Thus, the City's current (year 2003) water demand is estimated at 90,457.4 acre-feet.

Campus Water System

The domestic water system at UCR consists of an underground distribution system, a pumping system, storage tanks, and interconnections to the City of Riverside's water distribution system. The system on the East Campus is connected to the West Campus, via the City's system and a water line under the freeway that connects to Parking Lot 30 and the Agricultural Operations facility. This line would not be relied on for future campus development.

Domestic water supply to the East Campus is provided via the City of Riverside's 5-million-gallon (MG) 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 MG 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 City's distribution system,

[27] An acre-foot of water is the amount of water required to cover an acre of land with a foot of water, or 326,828 gallons. 1,000,000 gallons equates to 3.1 acre-feet.

located at the intersection of Linden and Florida Streets, is only used for emergency fire protection and as a fail-safe backup to the five million gallon reservoir connection.

Domestic water is provided to the West Campus via connections to existing City water lines running east/west in University Avenue, Everton Place, and Martin Luther King Boulevard, and north/south lines in Chicago Avenue, Iowa Avenue, and the Cranford Avenue street alignment.

The campus 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.

Campus Water Demand

For the year 2001/02 average daily domestic water consumption for both the East and West Campus was approximately 2.29 MGD. Approximately 40 percent of the total campus water consumption is attributed to indoor use, including residential, instruction and research space, steam boilers and cooling towers, chillers, food facilities, restrooms, custodial, showers, and drinking fountains. The remaining 60 percent is used for landscape irrigation (not including the agricultural teaching and research fields, which are irrigated with potable water from the Gage Canal).

Solid Waste

The City of Riverside Solid Waste Division is responsible for the collection and handling of residential refuse, recycling, and greenwaste generated within the City of Riverside. At this time, the La Sierra, University, and Orangecrest areas are serviced by a private contractor, Burrtec Waste Industries, while establishments throughout the City are serviced by one of three private contractors: Athens, Burrtec, or CR&R.

The Robert A. Nelson Transfer Station, located at 1830 Agua Mansa Road, receives refuse from western Riverside County, including the UCR campus. The Robert A. Nelson Transfer Station Authority has leased the site on the property from the Riverside County Waste Management Department. The operator is Burrtec Waste Industries. The transfer station has a capacity to transfer up to 2,700 tons of solid waste per day. It is currently averaging about 2,000 tons per day. The facility is currently seeking the building permits for construction of a materials recycling facility (MRF) at the same location, which could occur as early as 2004.

On the UCR campus, trash is collected and placed in containers strategically located throughout the campus. The trash is then collected by UCR utilizing its own truck for hauling to the Robert A. Nelson Transfer Station. During the July 1, 2002, to June 31, 2003, period, a total of 2,100 tons of solid waste were hauled to the Robert A. Nelson Transfer Station. In addition, 2,220 tons of assorted waste were diverted, recycled, or reused by the campus as shown in Table 4.15-2. Thus, approximately 2,220 tons of the 4,320 tons of solid waste produced annually on campus is diverted, recycled, or reused, which is

approximately 51 percent of the general solid waste stream. The campus also generates approximately 8,000 tons annually of construction debris from renovation or demolition of existing buildings and construction of new buildings (Personal communication, Bob Giese, 2003).

All landfills in Riverside County are Solid Waste Municipal Landfill Sites, 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.

Table 4.15-2 UCR Solid Waste Generation and Recycling July 1, 2002—June 31, 2003

Type of waste	*Tons*
Hauled to Transfer Station	
Solid Waste	2,100
Recycled, Reused, or Diverted	
Organics [a]	1,600
Scrap and Metal	88.75
Mixed Paper and Cardboard	467.01
Bottles and Cans	6.408
Lumber and Pallets	57.5
Subtotal	*2,220*
Total	***4,320***

Source: UCR Landscape and Refuse Services Department, 2003

[a] 620 tons of organics were hauled by UCR to an on-site (UCR Agricultural Operations) composting area where it will eventually be used in fields and campus landscaping, and another 980 tons were hauled by True Green (a tree company on contract) to a recycler.

The Operations division of the Riverside County Waste Management Department receives, compacts, and buries refuse received at the various landfill sites, which are located throughout the County in order to provide service to all of the County's residents. 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.

In 1996, the capacity of the Badlands Landfill was estimated at approximately 13.8 million tons, including a planned expansion defined in the current operating permit for the landfill. Since the study, approximately 1.4 million tons have been placed in the landfill, leaving an estimated remaining capacity of approximately 12.4 million tons. The landfill is permitted to receive a maximum daily tonnage of 4,000 tons, which would result in the landfill reaching capacity between the year 2018 and 2020, assuming a 2 percent growth rate in solid waste generation.

Solid Waste Minimization

UCR implements a waste/source reduction and recycling program that includes separation of wastes through sorting 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 attempting to shift its procurement practices towards recyclable, second generation, or reusable products to the extent feasible. As mentioned above, from July 1, 2002 to June 30, 2003, approximately 51 percent of solid waste was diverted, recycled, or reused.

Wastewater

The Sewerage Systems Services Program, and its Treatment Services unit, administered by the City of Riverside Public Works Department, provides for the collection, treatment, and disposal of all wastewater generated within the City of Riverside and complies 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 the Jurupa, Rubidoux, and Edgemont Community Services Districts.

The wastewater collection system includes over 1,100 miles of gravity sewers ranging in size from six 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.

Treatment Services is responsible for providing the effective treatment of all domestic and industrial wastewater generated within the City of Riverside and in the Rubidoux, Edgemont, and Jurupa Community Services Districts. This entails the continuous efficient operation of the primary, secondary, and tertiary treatment plants to produce high-quality treated effluent that complies with State and federal requirements. The City of Riverside Regional Water Quality Control Plant (RRWQCP) provides treatment of all campus-generated wastewater, with UCR operating its own collection system that then connects to the City's system. The RRWQCP currently treats 32 million gallons per day (mgd) and has a capacity of 40 mgd. The City of Riverside has indicated that they do not anticipate any problems in accommodating future growth of UCR or the City at the RRWQCP.

The RRWQCP covers over 120 acres, and new construction is adding to the number and variety of equipment maintained at the plant. Projects to upgrade and replace old equipment are ongoing.

The UCR campus operates its own on-site wastewater collection system. The sanitary sewer system consists of a network of 4-, 6-, and 8-inch-diameter lines. These campus-owned and maintained, 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.

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 service an agricultural operations building south of Martin Luther King Boulevard near the Gage Canal. The UNEX, Human Resources, and Highlander Hall are serviced from sewer laterals extending from the trunk line in University Avenue.

A 15-inch City-owned trunk sewer line crosses UCR and services UCR west from Valencia Hills Drive following the general alignment of University Avenue on the East Campus. As measured during a monitoring event in November/December 2001, UCR currently discharges approximately 1 mgd of wastewater into this City trunk line. Areas of the City east of the campus discharge into this line as well. The City and UCR have a wastewater discharge agreement that allows the campus to discharge 1.55 cfs (approximately 1 mgd) into the portion of the City trunk line within the East Campus between Valencia Hills Drive and Canyon Crest Drive. Approximately 60 percent of the current wastewater flow, or approximately 0.6 mgd, discharges into this portion of the trunk line; therefore, additional sewer capacity remains based on this agreement.

Electricity

The City of Riverside Public Utilities Department (PUD) currently provides electricity to the UCR campus. In 2000, of the electricity provided to the City service area, 41.5 percent was generated by coal, 18.1 percent by nuclear power, 1.8 percent by hydropower, and 38.6 percent was purchased from third parties. The system consists of 89.8 circuit miles of transmission lines, 1,067.4 circuit miles of distribution lines, with 14 substations. Production totaled 2,428 million kilowatt-hours (kWh) in 2000. Peak day demand during 2000 was 473.1 megawatts (MW), with a historical peak of 479 MW. Total electric use in the City for 2000 was 2,153 million kWh; this total includes 436 million kWh for commercial use and 419 million kWh in sales to other utilities.

To augment electrical supply, Riverside has begun a program of Gas to Energy facilities, which utilize landfill gas to generate electricity. In January 2001, the Badlands Gas to Energy facility came on-line, and currently produces approximately 1.2 MW. Additional facilities are planed at additional landfills, including Mead Valley (1.0 MW), Edom Hill (2.0 MW), Lamb Canyon (1.1 MW), Coachella (1.2 MW) and a second engine at Badlands, if sufficient landfill gas is available at that facility.

Currently, the campus uses approximately 84 million kWh of electricity annually. The energy is received through a 69 kilovolts (kV) line at a substation west of the 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 distribution of power to the campus at 12 kV. Campus 4.16 kV distribution lines and building transformers have been gradually replaced on a selected basis. 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. For this reason, the capacity of the substation is 25 mega volt amps (MVA) versus the 50 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. The steam plant is the only existing 5 kV load that is planned to remain at 5 kV. A total capacity of 4 MVA at 5 kV would remain to serve the steam plant load.

Current peak power demands are approximately 5 MVA on the 5 kV system and 11 MVA on the 12 kV system, for a total of 16 MVA. Since the majority of 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 30 are currently served by local city lines. In addition, there are aboveground, high voltage 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 Riverside PUD.

Currently, the central chilled water system that serves the East Campus academic core is powered by electricity. This system consists of a central chiller plant, a 2 million gallon thermal energy storage (TES) tank, and a distribution system that pumps chilled water to most of the buildings within the core. The central plant houses five chillers with a total of 4,600 tons.

The 24,000 ton-hour TES Tank 1 is located on the hill southeast of the East Campus academic core to provide for pumped flow to academic buildings. This TES tank initially operated in partial storage mode, as additional capacity was required to meet campus demand. Following an agreement with the City of Riverside Public Utilities (CRPU), the chiller/TES tank system began operating in full storage as of summer 2002 in concert with an additional 2.7 million gallon TES tank that was added. This tank (TES 2) is located above Parking Lot #9 at the same elevation as Tank 1. Both are looped into the distribution network with the existing chillers. TES 2 has added 30,000 ton hours of thermal storage to the system. It is anticipated that during peak electrical hours (6 hours, from 12 PM to 6 PM) the electric chillers will be turned off and campus demand for chilled water will be fed entirely from the TES tanks to take advantage of more favorable energy costs during off-peak times. This system saves energy costs while increasing the efficiency and capacity of the campus chilled water production system to ensure a continuous supply of chilled water to essential campus facilities.

A Satellite Chiller Plant and related utility piping Infrastructure have recently been constructed north of TES Tank 2, and is also powered by electricity. This plant consists of two chillers that service the TES 2 tank. These improvements increase chilled water capacity for East Campus to service new buildings currently under construction, as well as planned development, and enhances the campus TES system and chilled water management capabilities. The 2005 LRDP provides for future expansion of the Satellite Chiller Plant and the potential addition of a third TES tank west of TES Tank 2.

Natural Gas

UCR currently utilizes natural gas for heating and some cooling needs for research and instructional lab purposes. Demand for natural gas is expected to more than double with the LRDP due to the large amount of housing proposed. Natural gas is provided to the East Campus by the SCGC. Currently, demand for natural gas on the campus equates to approximately 12,000 therms per day. 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 campus. From the central utility plant, the natural gas is distributed to various buildings on the east side through its tunnel system and by direct burial pipeline, from 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 Martin Luther King Boulevard, although existing lines in University Avenue serve buildings along University Avenue and the International Village student housing. An additional potential point of connection exists south of Martin Luther King Boulevard at Canyon Crest Drive.

In a letter dated December 31, 2001, SGC indicated that it could provide gas to the project, and that service would be in accordance with the Company's policies and extension rules on file with the California Public Utilities Commission.

Campus Energy and Water Conservation Programs

The campus currently employs energy conservation measures in all new as well as renovated construction on campus, in accordance with all applicable State energy conservation requirements. Energy conservation measures incorporated into new projects include the following:

(1) Installation of thermal insulation in walls and ceilings, especially for air conditioned buildings

(2) Installation of high energy efficiency refrigerators in future on-campus housing units

(3) Incorporation of passive solar features where cost effective in the architectural design of new campus buildings

(4) Installation of time controlled public area lighting, as funds are available, for interior and exterior areas as to limit lighting to levels necessary for the safety of person or property

4.15.3 Regulatory Framework

Water

Federal and State

The Riverside Public Utilities Department 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.

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. Urban water suppliers, including the City of Riverside, are required, as part of the Act, to develop and implement Urban Water Management Plans to describe their efforts to promote efficient use and management of water resources.

Senate Bill 610

As of January 1, 2002, 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. Although SB 610 does not apply to the University of California, the City of Riverside has prepared a Water Supply Assessment for this project.

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:

> 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….

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.

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 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).

Energy

Federal

No federal policies related to energy would apply to the 2005 LRDP.

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.

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.

Green Building Policy and Clean Energy Standard

On July 17, 2003, the UC Board of Regents adopted a systemwide policy for the design of "Green Buildings" and a standard for the use of "Clean Energy." The Green Building Policy and Clean Energy Standard calls for[28]

- The University to adopt principles of energy efficiency and sustainability in its capital projects to the fullest extent possible, consistent with budgetary constraints and regulatory and programmatic requirements
- The University to minimize its impact on the environment and reduce nonrenewable energy use by purchasing green power from the electrical grid, promoting energy efficiency, and creating local renewable power sources
- The development and implementation of this policy for all proposed and existing University facilities. The Regents will be provided with an annual report that examines impacts of the policy on energy utilization and building design and on operating costs

When the Board of Regents approved the Green Building Policy and Clean Energy Standard, it authorized the University of California Office of the President to finalize implementation guidelines for the campuses. Draft recommendations on how UC could implement the standards outlined in the Regents policy may include the application of sustainability principles in the designs of new buildings such that all new building projects will outperform the required provisions of the California Energy

[28] Facts About the University of California, Green Building Policy and Clean Energy Standard, August 2003 (http://www.ucop.edu/news/factsheets/greenbuildings.pdf)

Codes Title 24 efficiency standard by at least 20 percent, and the incorporation of local renewable power for existing and new facilities along with the purchasing of "green" or renewable power from the electrical grid to reduce systemwide nonrenewable energy consumption. All draft recommendations will be finalized by the UC Office of the President for implementation. A report will be provided on an annual basis to update The Regents on the policy's progress.

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.

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.

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.

4.15.4 Impacts and Mitigation Measures

Methodology

Domestic Water

As a conceptual land use plan, the LRDP helps guide the siting of future physical development, but does not commit the campus to any specific projects. To estimate the potential for implementation of the 2005 LRDP to result in the need for new or expanded water supply entitlements was evaluated by comparing existing to future water demand, based on water demand estimates developed in the 2005 LRDP and comparing the future demand to available water supplies, based on existing water supply entitlements. Water demand estimates developed in the 2005 LRDP were based on per person use of 70 gallons per day for students living on campus and 20 gallons per day for students, staff, faculty and visitors living off campus, based on 2001 UCR water consumption rate and sustainability factors that promote water conservation in future buildings. These future demands are consistent with sustainable demands used in campus planning (Personal communication, Bruce Thomas, 2003).

Solid Waste

To determine the potential for the 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 the campus was calculated. A demand generation factor was developed by comparing existing occupied building space to existing generation of solid waste in order to identify a generation rate of tons of solid waste per 1,000 square feet. This rate was then applied to future occupied building space, and 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 LRDP would hinder compliance with applicable solid waste statutes.

Waste Water

To determine the potential for implementation of the 2005 LRDP to exceed wastewater treatment requirements, the 2005 LRDP program and policies were evaluated to determine whether implementation of the 2005 LRDP would result in exceedances of applicable wastewater requirements. To assess the potential for implementation of the 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 the campus was developed in the 2005 LRDP by using 90 percent of domestic water use (Personal communication, Bruce Thomas, 2003).

Energy

To determine the potential for the 2005 LRDP to require or result in the construction or expansion of electrical and natural gas facilities, future electrical and natural gas demand was calculated in the 2005 LRDP, based on current consumption and anticipated growth in demand. Energy use considered for near term development is based on current consumption. Mid- and long-term consumption takes into account more stringent State energy codes by the year 2015. This is estimated as an average energy consumption reduction of 65 percent based on current consumption. To determine whether the 2005 LRDP would encourage the wasteful or inefficient use of energy, the LRDP program and policies were evaluated to identify whether they would promote wasteful or inefficient use of energy (Personal communication, Ray Keane, 2003).

Thresholds of Significance

The following thresholds of significance are based on Appendix G of the CEQA Guidelines. For purposes of this EIR, implementation of the 2005 LRDP may have a significant adverse impact on utilities and service systems if it would result in any of the following:

- Require or result in the construction of new water treatment facilities or expansion of existing facilities, which could cause significant environmental effects

- 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
- 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[29]
- 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
- 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 adequate capacity to serve the project's projected demand in addition to the provider's existing commitments
- Require or result in the construction or expansion of electrical and natural gas facilities, which could cause significant environmental impacts[30]
- Encourage the wasteful or inefficient use of energy[31]

Impacts associated with each of these thresholds are addressed in the discussion that follows, except for the second threshold, related to the need for construction of new storm drainage facilities, which is addressed under LRDP Impact 4.8-6 in Section 4.8 (Hydrology and Water Quality).

Effects Not Found to Be Significant

The Initial Study did not identify any effects not found to be significant related to utilities and service systems; therefore, all potential utility impacts are discussed in this EIR.

Impacts and Mitigation

Threshold	Would the project require or result in the construction of new water treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Impact 4.15-1 **Development under the 2005 LRDP would not require the construction of new or expanded water treatment facilities. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.**

[29] This threshold has been modified slightly for ease of comprehension.
[30] This threshold is not included in Appendix G and was added to specifically address the potential need for the construction or expansion of electrical and natural gas facilities on the UCR campus from implementation of the 2005 LRDP.
[31] This threshold is not included in Appendix G and was added to specifically address the use of energy on the UCR campus from implementation of the 2005 LRDP.

Implementation of the 2005 LRDP would result in the development of new buildings and facilities to accommodate an increase in student enrollment and corresponding increase in the campus population. The increase in building space and increase in the on-campus population would result in additional water demand.

During the planning horizon for the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies (PS). The following LRDP Planning Strategy is relevant to water conservation:

PS Conservation 5 — *Continue to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.*

In addition, the increase in water demand resulting from the increase in building space and on-campus population could be accommodated through the continued implementation of existing water conservation measures on campus. The existing campus Programs & Practices (PP) that would promote water conservation include the following:

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 local evaporation rates to maximize water savings for landscaping and retrofit existing systems over time

(This is identical to PP 4.8-2(a).)

PP 4.15-1(c) — *The campus shall promptly detect and repair leaks in water and irrigation pipes.*

PP 4.15-1(d) *The campus shall avoid serving water at food service facilities except upon request.*

As noted in Section 4.14.1 (Environmental Setting), the City of Riverside provides water service to the UCR campus and is responsible for the treatment of all water supplies to the University. As required by the California Department of Health Services, the City routinely monitors the water quality wells that supply potable water. The City is also constructing an additional treatment plant that would allow the City to exercise its rights to withdraw additional water from the Riverside groundwater basin by eliminating existing constraints based on water quality. As described in detail under Impact 4.15-2 below, there are sufficient water supplies from existing entitlements and resources to serve development that would result from implementation of the 2005 LRDP. About 55 percent of the projected demand associated with the 2005 LRDP is already considered in the demand projections utilized in the City of Riverside Urban Water Management Plan (UWMP). Further, the Water Supply Assessment indicates that an adequate water supply exists for the project. In addition to the delivery of adequate water supplies, the City has also made the necessary commitments (i.e., planning and financial) to adequately treat all water supplied to the City of Riverside within existing and/or planned water treatment facilities.

With implementation of the applicable LRDP Planning Strategy and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not require or result in the construction of new water treatment facilities or the expansion of existing facilities, the construction of which could cause significant environmental effects, and this impact would be *less than significant*.

Threshold	Would the project 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?

Impact 4.15-2 **Development under the 2005 LRDP 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. With implementation of the relevant 2005 LRDP Planning Strategy and Programs and Practices, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities to accommodate an increase in student enrollment and corresponding increase in the campus population. The increase in building space and increase in the on-campus population would result in additional water demand.

During the planning horizon for the 2005 LRDP, future development of the campus would be guided by a range of LRDP Planning Strategies, including LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, to require continued adherence to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California. Implementation of this Planning Strategy would include water conservation measures that would reduce water consumption. In addition, continued implementation of PP 4.15-1(a)

through PP 4.15-1(d), described above under Impact 4.15-1, would require improvements to the water system as necessary to serve new projects, in addition to a variety of water conservation measures.

In 2000, the total campus domestic water consumption was approximately 2.3 million gallons per day (mgd), or approximately 2,575 acre-feet per year (AFY) not including nonpotable 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, with approximately 60 percent used for landscape irrigation. Of the 40 percent, primary water uses include residential, research and laboratory, steam boilers and cooling towers, chillers, food facilities, restrooms, custodial areas, showers, and drinking fountains. Nonpotable 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 takes advantage of this right to augment nonpotable 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 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. For students living on-campus, the sustainability demand factor is 70 gallons per day. For students, faculty and staff not living on-campus, the sustainability demand is 20 gallons per day.

As shown in Table 4.15-3, future water demand would increase to a total of approximately 4.2 mgd (of approximately 4,704 AFY), an increase of approximately 1.9 mgd (or approximately 2,352 AFY).

Table 4.15-3 Existing and Projected UCR Campus Water Demand (in mgd)

Location	*2001*	*2015*
East Campus	2.1	3.0
West Campus	Less than 0.2	1.2
Total	***2.3***	***4.2***

Source: UCR 2005 Long Range Development Plan

Nonpotable water demand for irrigation of agricultural teaching and research fields would not increase as a result of the 2005 LRDP. As discussed in Impact 4.2-1 (Agricultural Resources), implementation of the 2005 LRDP would result in the conversion of approximately 125 acres of agricultural land to nonagricultural use; thus, the area subject to irrigation by nonpotable water would decrease.

The Water Supply Assessment (WSA) prepared for the 2005 LRDP addresses the adequacy of the City of Riverside's water supplies over the LRDP planning horizon, based on the City's 2001 Urban Water Management Plan (UWMP) and additional supply information developed for the WSA. The UWMP

assumed growth in UCR water demand would occur, based on campus growth or construction projected in the 1990 LRDP (much of which has not yet occurred).

The City's 2003 water demand is estimated at 90,457.4 acre-feet per year. The WSA estimates that citywide water demand would increase by approximately 11 percent by the year 2015, for a total citywide water demand of approximately 100,475 acre-feet per year.

Table 4.15-4 summarizes projected UCR water demands in the context of the City's UWMP. Total future domestic water for UCR is estimated at 4.2 million gallons per day (4,704 AFY). The City's UWMP already accounted for the University's current use (of 2,352 AFY) and projected an increase in demand of 258.72 AFY. Thus, the UWMP anticipated a future total demand of 2,610.75 AFY. With implementation of the 2005 LRDP, demand for domestic water would increase to approximately 4,704 AFY, approximately 2,093.28 AFY of water demand not anticipated in the City's UWMP.

Table 4.15-4 City Water Supply and UCR Projected Demand

	Projected Demand (acre-foot/year)
Total Future UCR Water Demand	4,704.0
Future UCR Water Use Accounted for in UWMP	2610.72
Additional UCR demand, not identified in UWMP	2,093.28

Source: Water Supply Assessment for the University of California, Riverside Proposed 2003 Long Range Development Plan, City of Riverside. See Appendix I.

Since 2000, the City of Riverside has been voluntarily selling water to Western Municipal Water District (WMWD). In 2000, WMWD purchased 3,143 acre-feet; the UWMP predicted that this amount would reach 4,000 acre-feet by 2005. The City is not obligated to sell this water to Western and could discontinue the sale if the water were needed to serve the City's customers. The City will also have additional supply available once an (under construction) water treatment plant becomes fully operational and the City can expand extraction of groundwater from the Riverside basin, as indicated in Table 4.15-1. Thus, the City's Bunker Hill and/or Riverside groundwater supplies are more than adequate to serve the project with an additional 2,093 acre-feet of water per year.

As discussed more fully in the WSA (included as Appendix I), the City's total projected water supplies (including groundwater) available during normal, single dry, and multiple dry years during a 20-year period, are adequate to meet the projected water demand resulting from implementation of the 2005 LRDP. By 2015, the City's anticipated surplus is projected at 28,100 acre-feet per year.

With implementation of the applicable LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not result in the need for new or expanded water supply entitlements, as there are sufficient water supplies to serve the project from existing entitlements and resources, and this impact would be *less than significant*.

Threshold	Would the project be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs?

Impact 4.15-3 **Development under the 2005 LRDP 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*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities to accommodate an increase in student enrollment and corresponding increase in the campus population. The increase in building space and increase in the on-campus population would result in the generation of additional solid waste.

As discussed in Section 4.15.2, Existing Conditions, the setting, approximately 51 percent of general solid waste stream is diverted, recycled, or reused, in consistent with the goals of the Integrated Waste Management Act. In addition, the campus diverts approximately 50 percent of its construction waste. The Year 2002/2003[32] solid waste generation for UCR is shown in Table 4.15-5.

Table 4.15-5 2002-03 Solid Waste Generation for UCR

	Development on Campus (gsf)	*Solid Waste Generated (tons per year)*	*Tons recycled per year*	*Percent recycled per year*	*Solid Waste Generation Factor (tons/1,000 sf)*[c]	*Total Solid Waste to Landfill (tons per year)*
Construction [a]	N/A	8,000	4,000[b]	50%	N/A	4,000
Campus Operation	4,697,016	4,320	2,220	51%	0.9197[c]	2,100
Total	***4,697,016***	***12,320***	***6,220***	***50%***	***N/A***	***6,100***

Source: UCR Landscape and Refuse Services Department, 2003

[a] Assumes average development per year remains constant.

[b] Assumes 50% recycled as encouraged by AB 939.

[c] 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., 4,320 tons per year/4,697,016 gsf = 0.0009197 tons per year/square foot or 0.9197 tons per year/1,000 square feet). Therefore, the UCR solid waste generation factor is 0.9197 tons per year/1,000 square feet.

As shown in Table 4.15-5, with a total of 4,697,016 gsf of existing development on campus and a solid waste generation amount of 4,320 tons per year, a solid waste generation factor of 0.9197 tons per 1,000 square feet was calculated for the campus. This generation factor, in turn, can be used to estimate the amount of solid waste that will be generated by UCR from implementation of the 2005 LRDP. Construction waste is assumed to remain constant, as construction is currently occurring on the campus. In addition, by assuming that the campus will continue to recycle 50 percent of its construction waste and 51 percent of its solid waste generated from campus operation, the total amount of solid waste recycled per year can also calculated. The future solid waste generation for UCR is shown in Table 4.15-6.

[32] Data for the 2001/02 academic year were incomplete, therefore 2002/03 data are utilized herein.

Table 4.15-6 Projected Increases in Campus Solid Waste Generation

	Development on Campus (gsf)	*Solid Waste Generation Factor (tons/1,000 sf)*	*Solid Waste Generated (tons per year)*	*Tons recycled per year*	*Percent recycled per year*	*Total Solid Waste to Landfill (tons per year)*
Construction [a]	N/A	N/A	8,000	4,000	50%	4,000
2005 LRDP Operation	7,105,691	0.9197	6,535 [b]	3,333	51%	3,202
Total	***7,105,691***	***N/A***	***10,535***	***7,333***	***51%***	***7,202***

Source: UCR Landscape and Refuse Services Department, 2003

[a] Assumes average development per year remains constant.

[b] The amount of solid waste generated is calculated by multiplying the total development on campus by the solid waste generation factor of 0.9197.

The UCR Landscape and Refuse Services Department estimates that construction debris currently exceeds 8,000 tons annually, due to the accelerated building/seismic program on campus over the last eight years. Because the amount of construction-related solid waste that will be generated under the 2005 LRDP is already accounted for in UCR's annual estimated figure of 8,000 tons, as described in Section 4.15.2 of this EIR, and no net increase in the rate of construction-related solid waste generation is anticipated to occur as a result of implementation of the 2005 LRDP, this analysis focuses on operational increases in solid waste generation.

Projected solid waste generation due to campus operation from implementation of the 2005 LRDP would be approximately 6,535 tons per year, an increase of approximately 2,215 tons when compared to the amount of solid waste generated during 2002/03. 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 12.4 million tons. Based on the current permit and a two percent growth rate, the landfill is expected to reach capacity between the year 2018 and 2020. The Badlands Landfill currently receives approximately 3,100 tons per day, but is permitted for a maximum of 4,000 tons per day. The increase of approximately 2,215 tons of solid waste per year from implementation of the 2005 LRDP would equate to an additional 42.6 tons of solid waste per week—an increase of less than 1 percent of daily landfill capacity—and can be accommodated within the remaining permitted capacity of the Badlands Landfill.

Implementation of the 2005 LRDP 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*.

Threshold	Would the project fail to comply with applicable federal, State, and local statutes and regulations related to solid waste?

Impact 4.15-4 **Implementation of the 2005 LRDP would comply with all applicable federal, State, and local statutes and regulations related to solid waste. This impact would be *less than significant*.**

The University of California is not subject to AB 939 but voluntarily applies its standards are a goal. The campus currently meets the AB 939 solid waste reduction goal with a 51 percent diversion rate from the

solid waste stream through recycling, diverting, composting, or reuse on the campus. Additionally, the campus also diverts approximately 50 percent of its construction-related solid waste. Such programs would continue during the 2005 LRDP, in accordance with the requirements of AB 939. Therefore, with implementation of the 2005 LRDP UCR would continue to comply with applicable federal, State, and local statutes and regulations related to solid waste, and this impact would be *less than significant*.

Threshold	Would the project exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

Impact 4.15-5 **Development under the 2005 LRDP would not exceed wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board. With implementation of the relevant 2005 LRDP Planning Strategy and Program and Practice, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities, including instructional and research facilities, student housing and related support. This would increase the amount of wastewater generated by the campus.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS). With implementation of LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, the campus would be required to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California. Compliance with this PS would reduce water uses, which, in turn, would reduce wastewater discharge.

During the planning horizon for the 2005 LRDP, the campus will also continue to implement the following existing campus Program and Practice that would reduce or avoid potential impacts associated with water quality standards or waste discharge requirements:

PP 4.15-5 *The campus will continue to comply with all applicable water quality requirements established by the SARWQCB.*

(This is identical to Hydrology PP 4.8-1.)

As discussed in Section 4.08, Water and Hydrology, 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 Santa Ana Regional Water Quality Control Board (SARWQCB). As discussed in Section 4.7 (Hazards and Hazardous Materials), 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 4.8-1, the campus would be required to comply with all applicable water quality requirements established by the Santa Ana Regional Water Quality Control Board.

The City of Riverside Regional Water Quality Control Plant (RRWQCP) provides treatment of all campus-generated wastewater, and is responsible for meeting federal and State requirements, including applicable Waste Discharge Requirements established by the SARWQCB. The RRWQCP currently treats 32 million gallons per day (mgd) and has a capacity of 40 mgd. Future wastewater discharged by the UCR campus (an approximate increase of 0.9 MGD, as discussed in Impact 4.15-6 below) would be treated at the RRWQCP, which does not anticipate any treatment capacity problems, and thus is anticipated to continue to comply with all wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board.

With implementation of the LRDP Planning Strategies identified above and continued implementation of existing campus Programs and Practices, implementation of the 2005 LRDP would not exceed applicable wastewater treatment requirements of the Santa Ana Regional Water Quality Control Board, and this impact would be *less than significant*.

Threshold	Would the project 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?

Impact 4.15-6 **Development under the 2005 LRDP could require the construction of new or expanded wastewater conveyance and treatment systems. With implementation of the relevant 2005 LRDP Planning Strategy and Mitigation Measures, this potentially significant impact would be reduced to a *less-than-significant* level.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and an increase in campus enrollment that would result in a corresponding increase in the campus population, which would increase wastewater discharge.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS). With implementation of LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, the campus would be required to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California. Compliance with this PS would reduce water consumption, which, in turn, would reduce wastewater discharge.

Table 4.15-7 summarizes projected wastewater discharge from the UCR campus with implementation of the 2005 LRDP, based on the current sewer flow as measured during a 2001 monitoring event and using 90 percent factor of the projected sustainable domestic water use factor used to estimate future water consumption. Current flows (of 1.1 mgd) would increase to approximately 2.0 mgd, an increase of approximately 0.9 mgd.

Table 4.15-7 Existing and Projected UCR Campus Sewer Flows (in mgd)

Location	*2001*	*2015*
East Campus	1.0	1.5
West Campus	Less than 0.1	0.5
Total	***1.1***	***2.0***

Source: 2005 LRDP

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 Riverside Regional Water Quality Control Plant 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 Hills Drive to Canyon Crest, 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.

MM 4.15-6 would require UCR to work with the City of Riverside to determine the capacity of existing sewer trunk lines, estimate the future impact of LRDP implementation on available capacity, and develop solutions to any identified capacity problems.

MM 4.15-6(a) *UCR will work with the City of Riverside to evaluate the capacity of existing sewer trunk lines serving the campus and estimate the future impact of LRDP implementation on available capacity.*

MM 4.15-6(b) *If the study of sewer trunk line capacity determines that available capacity would be exceeded, UCR and the City will negotiate payment of fair share of improvements to provide sufficient discharge capacity to meet campus needs. UCR shall contribute its fair share payments and additional required trunk line capacity shall be provided by the City prior to exceedance of sewer trunk line capacity.*

Implementation of MM 4.15-6(a) and MM 4.15-6(b) would reduce potential impacts on wastewater conveyance systems by ensuring that upgrades are identified and implemented as required. The University is willing to contribute its fair or appropriate share towards evaluation of sewer trunk capacity, and the University will negotiate for a contribution to any necessary capacity upgrades pursuant to procedures described in Government Code 54999 *et seq*. for contributions to utilities. In addition, assuming establishment by the City of Riverside of a mechanism to collect funds from developers or

other entities that contribute to sewer conveyance capacity issues and implement sewer capacity upgrades, the University will pay its fair share if such fees are deemed necessary.

The potential environmental effects associated with expanding existing sewer trunk lines or providing new wastewater conveyance systems are evaluated in this EIR as part of the proposed project, in Sections 4.1 through 4.15. The modification, expansion, or construction of wastewater conveyance systems could contribute to the effects on air, noise, traffic, agriculture, and other resource areas that are fully analyzed for the 2005 LRDP. With the incorporation of existing campus Programs and Practices and mitigation measures discussed in other sections of this document 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.

Implementation of the 2005 LRDP could result in or require the construction of new wastewater conveyance facilities or expansion of existing facilities, the construction of which could not cause significant environmental effects, and this impact would be *less than significant*.

Threshold	Would the project 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?

Impact 4.15-7 **Implementation of the 2005 LRDP would not increase wastewater generation such that treatment facilities would be inadequate to serve the project and the provider's existing commitments. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and an increase in campus enrollment that would result in a corresponding increase in the campus population, which would increase wastewater discharge, as discussed in Impacts 4.15-5 and 4.15-6 above.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS), including LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, to require adherence to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California.

As discussed above in Impact 4.15-6, the existing amount of wastewater generated plus the proposed increases under the 2005 LRDP would result in an increase from existing flows of approximately 0.9 mgd. The City of Riverside has indicated that it has adequate treatment capacity for the anticipated discharge of additional wastewater. As previously discussed, the RRWQCP currently treats 32 mgd and has a capacity of 40 mgd. The project would result in an increase of approximately 0.9 mgd in wastewater flows, which could be accommodated by the current excess capacity of 8 mgd. The

wastewater treatment provider that serves the project has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not 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, and this impact would be *less than significant*.

Threshold	Would the project require or result in the construction or expansion of electrical and natural gas facilities, which could cause significant environmental effects?

Impact 4.15-8 **Implementation of the 2005 LRDP could increase the demand for electricity, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures to accommodate an increase in student enrollment and corresponding increase in the campus population. The development of additional facilities on the UCR campus would result in increased energy demands on the campus.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS). With implementation of LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, the campus would be required to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California. Compliance with this PS would include energy conservation measures that would reduce energy consumption. In addition, existing Campus energy conservation measures would be included in new building construction. These measures, described under the existing setting, include (1) installation of thermal insulation in walls and ceilings, especially for air conditioned buildings; (2) installation of high energy efficiency refrigerators in future on-campus housing units; (3) incorporation of passive solar features where cost effective in the architectural design of new campus buildings; and (4) installation of time controlled public area lighting, as funds are available, for interior and exterior areas as to limit lighting to levels necessary for the safety of person or property.

Academic, residential, and support facilities would be constructed and/or subjected to additional use from the growth in campus population, increasing the demand for electricity to light, heat, and air condition these facilities. Based on conventional design (Title 24 energy criteria), the 2005 LRDP calculated that the total annual electricity demand is estimated to increase by 23 MVA at peak demand to a total of about 39 MVA by year 2015. The total capacity of the existing 12 kV substation is 54MVA, so the existing UCR campus electrical distribution system would be able to accommodate the anticipated

increased demand due to project implementation. The substation currently is fully redundant, with two 27-MVA transformers. Energy demands associated with new development on campus resulting from the 2005 LRDP would result in a loss of this redundancy. However, adequate electrical supply would still be provided.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would not require the construction or expansion of electrical facilities, which could cause significant environmental effects, and this impact would be *less than significant*.

Impact 4.15-9 **Implementation of the 2005 LRDP 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 a significant environmental impact. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures to accommodate an increase in student enrollment and corresponding increase in the campus population. The development of additional facilities on the UCR campus would result in increased natural gas demands on the campus.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS). With implementation of LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, the campus would be required to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with any future conservation goals or programs enacted by the University of California. Compliance with this PS would include energy conservation measures that would reduce natural gas consumption.

As discussed in the 2005 LRDP, implementation of the 2005 LRDP would increase the demand for natural gas from 12,000 therms per day to approximately 36,000 therms per day, which is an increase of 24,000 therms per day. The reason for the steep increase in natural gas is due to the types of uses proposed, which includes a substantial proportion of residential uses (i.e., on campus housing). Residential uses demand more natural gas than academic, administrative, and other proposed Campus uses. SCGC has indicated that they have sufficient gas supplies to serve the LRDP implementation (UCR 2003).

Modifications and extensions of existing natural gas distribution infrastructure 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 are evaluated as part of the effects of implementation of the entire project, and are addressed by environmental issue area as of the programmatic analysis of construction impacts in Sections 4.1 through 4.15 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 2005 LRDP. With the incorporation of existing campus Programs and Practices and mitigation measures related to reducing construction impacts, which discussed in other sections of this document, 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.

With implementation of the identified LRDP Planning Strategy, implementation of the 2005 LRDP would require the construction or expansion of natural gas distribution lines, which would not cause significant environmental effects, and this impact would be *less than significant*.

Threshold	Would the project encourage the wasteful or inefficient use of energy?

Impact 4.15-10 **Implementation of the 2005 LRDP would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*.**

Implementation of the 2005 LRDP would result in the development of new buildings and facilities and the replacement of existing structures to accommodate an increase in student enrollment and corresponding increase in the campus population. As discussed under Impact 4.15-8, the development of additional facilities on the UCR campus would result in increased energy demands on the campus.

During the planning horizon of the 2005 LRDP, future development of the campus would be guided by a range of Planning Strategies (PS). With implementation of LRDP Planning Strategy *Conservation 5,* described above under Impact 4.15-1, the campus would be required to adhere to the conservation requirements of Title 24 of the California Code of Regulations and comply with the current University policy on sustainability, as well as any future conservation goals or programs enacted by the University of California. Compliance with this PS would include energy conservation measures that would reduce electricity and natural gas consumption rates. Additionally, current and planned expansion of the TES system would allow increased generation of chilled water during off-peak energy use periods for use during peak periods and would also allow the distribution of chilled water for cooling systems through a gravity-feed system, which would result in further energy conservation.

With implementation of the LRDP Planning Strategy Conservation 5 identified above, implementation of the 2005 LRDP would not encourage the wasteful or inefficient use of energy, and this impact would be *less than significant*.

4.15.5 Cumulative Impacts

The geographic context for the analysis of cumulative water supply and solid waste impacts is the City of Riverside, including all cumulative growth therein, as represented by full implementation of the City of Riverside General Plan and development of the off-campus related projects, as discussed in Section 4.0 (Introduction to Environmental Analysis). The City of Riverside represents the service area for the City of Riverside Public Utilities Department with respect to water supplies, while the City of Riverside

represents the service area for the origin of the waste stream with respect to landfills under County jurisdiction. The context for cumulative impacts related to wastewater is the service area of the RRWQCP, which includes the City of Riverside. For cumulative impacts related to electricity, the geographic context is the service area of the City of Riverside Public Utilities Department, 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.

Water Supply

Development of related projects would demand additional quantities of water, depending on net increases in population, square footage, and intensity of uses. These projects would contribute to the overall regional water demand, to which the campus would contribute a total of 4.2 mgd, by 2015. The Urban Water Management Plan (UWMP) prepared by the City to assess water demand in the City of Riverside accounts for all projected development in its service area, including the UCR campus. The UWMP includes regional water demand and supply projections, as well as demand management and supply enhancement elements. The City determined that water supplies for its service area are adequate through 2020. Therefore, cumulative water supply impacts for the City of Riverside service area are not significant. The Water Supply Assessment completed for UCR (City of Riverside 2003) indicates that an adequate water supply is available to meet the needs of the campus through the LRDP planning horizon along with the demands of future projects in Riverside and thus the cumulative impact is not significant. In addition, due to the various conservation measures implemented on campus, even if the area-wide impacts were to become significant during the 2005 LRDP planning horizon, the contribution of the 2005 LRDP would be cumulatively considerable.

Related projects will also not require or result in the construction of new water treatment facilities or the expansion of existing facilities, thereby causing potentially significant environmental effects: the City of Riverside has indicated in the WSA that it will be able to meet all demands for water in the City of Riverside at least until 2015, and has already made the planning and financial commitments necessary to provide the facilities necessary for this to occur. No new facilities, nor the expansion of current facilities, beyond those already planned, will be required by the impact of related projects. Consequently, the impact with regard to water treatment facilities is not significant, and the contribution of the 2005 LRDP is also not cumulatively considerable.

Solid Waste

Development of related projects would produce additional quantities of solid waste, depending on net increases in population, square footage, and intensity of uses, and quantities of demolition debris generated by redevelopment projects. These projects would contribute to overall regional solid waste disposal and landfill demand. The County Sanitation District has indicated that the Badlands landfill will reach capacity between the year 2018 and 2020. 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 build out of the Riverside County General Plan (which includes a geographic area larger

than the City of Riverside), particularly because the County's General Plan build out assumes the year 2040, while the 2005 LRDP assumes a build out year of 2015. The County of Riverside Program EIR determined that the implementation of the proposed General Plan policies and proposed mitigation measures for solid waste collection and disposal services and facilities would result in a less-than-significant impact, and adequate landfill space would be available. County landfills will be accepting 3,319,941 tons of solid waste per year at General Plan build out as opposed to their predicted capability of disposing of 5,972,320 tons per year at that point in time.

The amount of additional solid waste attributable to campus operations associated with the 2005 LRDP is projected to be 10,855 tons per year, of which about 50 percent would be recycled. Assuming the County can accept all solid waste generated in 2040, it is further assumed that the County can accept all solid waste generated in 2015, which is the build out year of the 2005 LRDP. Additionally, the Robert A. Nelson Transfer Station will be a fully operational Materials Recycling Facility (MRF) in Spring 2004. As the sole intermediary between all UCR solid waste hauled from campus and the Badlands Landfill, the Robert A. Nelson Transfer Station/MRF would further reduce the 49 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 impact of the 2005 LRDP with regard to solid waste generation (at build year of 2015) is not considered cumulatively considerable.

The California Integrated Waste Management Act of 1989 requires that the City divert 50 percent of its solid waste by 2000 (Note: this represents a different geographic context than the remainder of the cumulative solid waste analysis, which occurs because the solid waste diversion requirements are enforced on a city-wide basis.). Through both City and private sector efforts, a myriad of innovative sources of reduction, recycling, composting, and reuse programs have been implemented. These programs have made waste diversion inroads not only in City government, but also in the residential and commercial/industrial sectors. The City is currently diverting 61 percent of its solid waste and projects that it will continue to meet the goal of diverting at least 50 percent of its solid waste in the future (Doke 2004; Ruby 2004). As such, related projects in the City of Riverside along with continued growth would not hamper the City's ability to reach its waste diversion goals. This cumulative impact with regard to solid waste diversion would not be significant. In addition, UCR currently has obtained a 51 percent diversion rate for solid waste, and it is expected that implementation of the 2005 LRDP will preserve this high rate of diversion, due to the incorporation of solid waste diversion into campus practices. Thus, the 2005 LRDP contribution to this impact will not be cumulatively considerable.

Wastewater

Development of related projects within the RRWQCP would generate additional quantities of wastewater, depending on net increases in population, square footage, and intensification of uses. These projects would contribute to the overall regional demand for wastewater conveyance and treatment. The RRWQCP is currently operating at 80 percent of capacity and is projected to have available capacity to

treat wastewater from its service area through 2015. Thus, related projects would not exceed the capacity of the wastewater treatment system and would not be considered a significant impact. Additionally, the campus would continue to implement water conservation measures that would result in a concomitant decrease in wastewater generation. Therefore, as the RRWQCP retains excess capacity, the individual contribution of the campus and the 2005 LRDP to wastewater generation on a regional basis would not be cumulatively considerable.

Cumulative growth in the RRWQCP service area could result in the need for additional conveyance infrastructure. At build-out, most of the service area would be urban; however, it is not expected that any expansion of conveyance infrastructure would result in significant environmental effects. The 2005 LRDP may require expansion of off-campus conveyance infrastructure. Impacts from expansion of on-campus conveyance infrastructure would result in localized effects that would also not be expected to result in cumulatively considerable effects. Consequently, the contribution of the 2005 LRDP is not considered to be cumulatively considerable.

Related projects would not result in the exceedance of RWQCB wastewater treatment requirements, and thereby would not have a cumulatively considerable impact. The Santa Ana RWQCB, in connection with the implementation of the NPDES program, has imposed requirements on the treatment of wastewater and its discharge into the ocean. Wastewater produced by future development would meet these requirements due to treatment available at the RRWQCP and the implementation of wastewater BMPs. While it is possible that these requirements will not be met, it is more likely that local government and future development will comply with these federally mandated requirements. Consequently, the impact is not 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 Santa Ana RWQCB. Consequently, even if future development would result in a considerable cumulative impact, the contribution of the 2005 LRDP would not be cumulatively considerable.

Energy

With respect to electricity, the 2005 LRDP would result in the permanent and continued use of this resource. However, anticipated power supplies for the City of Riverside are projected to be adequate through the planning horizon of the 2005 LRDP. Riverside Public Utilities supplies power to the City. Riverside Public Utilities has taken a variety of steps to ensure that the City of Riverside maintains a safe and reliable electric supply and delivery system, including maintaining long-term power agreements with power suppliers throughout the western United States, which ensures: electrical supplies at low rates, diversity of energy resources, system upgrade, efficiency and conservation efforts, and ongoing review of generation and transmission availability. They continually survey the market and keep abreast of industry evolution in order to best serve the City of Riverside (City of Riverside 2003b). Since the City of Riverside is projected to meet future demands, impacts would not be significant in terms of either supply or a potential need for added facilities. Therefore, the overall cumulative impact would not be significant and as the contribution of the 2005 LRDP with respect to electricity supplies or the need for additional facilities, would not be cumulatively considerable.

With regard to natural gas, the 2005 LRDP would also result in permanent and continued use of this resource. The campus is currently served by existing infrastructure that conveys gas from the SCGC. SCGC has indicated that demand projections are continuously updated, and supplying the campus with additional natural gas would not compromise its existing and projected service commitments. In addition, there would be no need to expand natural gas transmission infrastructure, as noted by the statement of the SCGC that its system has ample capacity to assure continued high levels of service to all customers within the region. The cumulative impact related to the supply of natural gas and to the need for additional or expanded facilities is not significant. The contribution from implementation of the 2005 LRDP is also not cumulatively considerable due to the fact that gas suppliers have assured UCR that there are adequate supplies for the 2005 LRDP and that no additional infrastructure is needed.

4.15.6 References

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Chapter 5 OTHER CEQA CONSIDERATIONS

Section 15126 of the California Environmental Quality Act (CEQA) Guidelines requires that all aspects of a project must be considered when evaluating its impact on the environment, including planning, acquisition, development, and operation. As part of this analysis, the Environmental Impact Report (EIR) must also identify (1) significant environmental effects of the proposed project, (2) significant environmental effects that cannot be avoided if the proposed project is implemented, (3) significant irreversible environmental changes that would result from implementation of the proposed project, (4) growth-inducing impacts of the proposed project, (5) mitigation measures proposed to minimize significant effects, and (6) alternatives to the proposed project.

5.1 SIGNIFICANT ENVIRONMENTAL EFFECTS OF THE 2005 LRDP

Table 2-1 (Summary of Environmental Impacts and Mitigation Measures), which is contained in Chapter 2 of this EIR, and Sections 4.1 through 4.15 of this EIR provide a comprehensive identification of the environmental effects of the proposed project, including the level of significance both before and after mitigation.

5.2 SIGNIFICANT ENVIRONMENTAL EFFECTS THAT CANNOT BE AVOIDED IF THE 2005 LRDP IS IMPLEMENTED

Section 15126.2(b) of the CEQA Guidelines requires that an EIR describe any significant impacts that cannot be avoided, even with the implementation of feasible mitigation measures. Development under the 2005 LRDP would contribute to the following significant and unavoidable project-related impacts:

Agricultural Resources

- Operational impacts resulting from the conversion of approximately 125 acres of Prime Farmland to nonagricultural uses

Air Quality

- Construction impacts resulting from peak daily emissions of NOx
- Operational impacts resulting from peak daily emissions of VOC, NOx, and PM_{10}

Cultural Resources

- Potential demolition of historic or potentially historic structures

Noise

- Construction impacts resulting from groundborne vibration or groundborne noise levels
- Construction impacts resulting from an increase in on-campus ambient noise levels
- Construction impacts resulting from an increase in off-campus ambient noise levels

Traffic and Circulation

- Operational impacts resulting from an exceedance of the applicable LOS criteria for vehicle trips at up to 10 intersections during the A.M. and/or P.M. peak hour
- Construction 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

Although many project-related impacts resulting from implementation of the 2005 LRDP can be mitigated to a less-than-significant level, cumulative impacts would result from implementation of the 2005 LRDP in combination with the development of related projects in the area and projected regional growth. The impact areas for which there is a cumulatively considerable contribution of the 2005 LRDP to cumulative impacts are the following:

Agricultural Resources

- Conversion of approximately 125 acres of Prime Farmland into nonagricultural uses would result in a cumulatively considerable contribution to the regional trend of loss of farmland

Air Quality

- Operational emissions would result in a cumulatively considerable increase of criteria pollutant emissions for which the South Coast Air Basin is in nonattainment

Biological Resources

- Project development would result in a cumulatively considerable loss of special status species and habitat

Traffic

- Areawide increases in population, employment, and housing would result in cumulatively considerable increases in traffic volumes on streets and highways in the project vicinity

All other physical 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 EFFECTS

Section 15126.2(c) of the CEQA Guidelines requires a discussion of any significant irreversible environmental changes that would be caused by the proposed project. Specifically, Section 15126.2(c) states:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible, since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

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 project would involve a large commitment of nonrenewable resources
- The project involves uses in which irreversible damage could result from any potential environmental accidents associated with the project
- The proposed consumption of resources is not justified (e.g., the project involves the wasteful use of energy)

Development under the 2005 LRDP 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 2005 LRDP increases the development allocation and enrollment cap identified in the 1990 LRDP to accommodate an increase in the campus population. While the 2005 LRDP could be said to continue the commitment of the UCR campus site for University purposes for future generations, the 2005 LRDP also increases the commitment due to increased development that would occur on campus.

Resources that will be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources. In fact, the growth in student enrollment, and the associated growth in the campus population, is responsive to growth that has already occurred in the state as the grandchildren of the "baby boom" generation mature to college age. Therefore, natural resources are currently being consumed by this demographic group and would continue to be consumed by this group at some location. Nonetheless, construction activities related to the 2005 LRDP would result in the irretrievable commitment of nonrenewable energy resources, primarily in the form of fossil fuels (including gasoline, fuel oil, and natural gas for automobiles and construction equipment).

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 possible. 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 provide.

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, many in-building lighting systems are being replaced over time with up-to-date energy-saving equipment such as automatic photosensitive switching equipment. Conservation efforts are also expected to involve improved HVAC systems with microprocessor-controlled energy management systems. In addition, the campus shall continue to implement all new development under the 2005 LRDP in accordance with specifications contained in Title 24 of the CCR.

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.

5.4 GROWTH-INDUCING IMPACTS

As required by the CEQA Guidelines, an EIR must include a discussion of the ways in which the proposed project could directly or indirectly foster economic development or population growth, or the construction of additional housing and how that growth would, in turn, affect the surrounding environment (CEQA Guidelines Section 15126.2(d)). Growth can be induced in a number of ways, including the elimination of obstacles to growth, or through the stimulation of economic activity within the region. The discussion of removal of obstacles to growth relates directly to the removal of infrastructure limitations or regulatory constraints that could result in growth unforeseen at the time of project approval. Under CEQA, induced growth is not considered necessarily beneficial, detrimental, or of little significance to the environment.

In general, a project may foster spatial, economic, or population growth in a geographic area if it meets any one of the criteria identified below:

- The project removes an impediment to growth (e.g., the establishment of an essential public service, or the provision of new access to an area)
- The project results in the urbanization of land in a remote location (leapfrog development)
- Economic expansion or growth occurs in an area in response to the project (e.g., changes in revenue base, employment expansion, etc.)
- The project establishes a precedent-setting action (e.g., a change in zoning or general plan amendment approval)

If a project meets any one of these criteria, it may be considered growth inducing.

The 2005 LRDP 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 11.8 million gsf of development. As discussed in Section 4.11 of this EIR and summarized below, the 2005 LRDP is

intended to accommodate increased enrollment through the year 2015, 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 2001/02 enrollment was 12,703 students three-quarter average headcount.

The UCR campus is a substantial economic force in the regional economy. In the 2001/02 academic year, the campus employed 3,742 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 2005 LRDP 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.

The 2005 LRDP would be considered growth inducing for the following reasons:

- The project would increase the campus-affiliated population by an estimated 26,266 persons over existing levels, including up to 15,830 persons in the City of Riverside (including on-campus residents). Details of these projections are presented in Section 4.11 (Population and Housing).
- The project would indirectly increase employment and population in the region through the expenditures made by the campus, and the campus population.
- The project would establish a precedent setting action by increasing the amount of development that could occur on the campus

- The 2005 LRDP would not remove an impediment to growth such as the provision of infrastructure or encourage urbanization of land in a remote location.

Each of these aspects of growth inducement is discussed below, with a view to characterize the manner in which growth induced by the 2005 LRDP would affect the study area communities.

5.4.1 Economic Expansion

Direct Growth

With the implementation of the 2005 LRDP, the total campus-affiliated population for the UCR campus, including dependents living in on-campus housing would grow from a total of 4,715 in 2001/02 to an estimated 14,014 by 2015/16; an increase of 9,299 persons. In the City (exclusive of the campus), a population increase of 6,531 persons, including students, faculty, staff and dependents of married UCR employees would result in a total increase in campus affiliated population of 15,830 persons within the City of Riverside.

To meet the LRDP goal of housing 50 percent of campus enrollment in campus-controlled housing, approximately 8,353 additional student beds would be provided on campus under the 2005 LRDP. Because of this substantial increase in on-campus housing, although the student population would essentially double, off-campus student housing demand is anticipated to increase from the current 8,556 students to approximately 12,500, an increase of approximately 46 percent. Because of the geographical spread of student residential locations (with 48 percent living outside the City of Riverside), the increase in student demand would be spread throughout the area.

The 2005 LRDP would also provide for an increase of 4,174 employees on the campus over existing levels. Although some of the faculty and staff employees would be expected to be already living in the region and around the campus, for purposes of this analysis it is assumed that all 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 2.12 persons per faculty and staff, based on an average of 3.12 persons per household, approximately 8,849 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 2,093 housing units within the City and 1,169 units within the County.

Indirect Economic Growth

The 2005 LRDP 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 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.) It is the provision of this physical space and its specific location that will determine the magnitude of environmental impacts of the additional economic activity. Although the economic effect can be predicted, the actual environmental implications of this type of economic growth are difficult to predict, since they can be spread throughout the region and beyond.

While short-term employment opportunities would be generated during the construction period for individual projects developed under the 2005 LRDP, it is anticipated that construction employees would commute from elsewhere in the region, rather than relocate to the UCR area for a temporary construction assignment. Further, the 2005 LRDP is being prepared in response to an anticipated increase in the campus population, including an increase in academic and staff employees that is consistent with adopted regional forecasts. Nonetheless, implementation of the 2005 LRDP may result in the creation of indirect and induced jobs.

UCR's economic impacts are primarily the result of campus purchases of goods and services, payment of taxes and salaries, capital expenditures, and visitor spending, which affects the regional economy of the City and County of Riverside, and on a more indirect basis the State of California. UCR contributes to the economic health of the City of Riverside.

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 (University of California 2003; Sedway Group 2001[33]). 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 4,174 new direct faculty and staff jobs related to the 2005 LRDP could lead to about 4,000 to 8,000 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.

[33] University of California. 2003. *Economic Impacts of UC Campuses.* Preliminary results from an ongoing study by ICF Consulting. http://www.universityofcaliforina.edu/itstartshere/ Website accessed on February 11, 2003.
Sedway Group. 2001. *Economic Impacts of the UC Berkeley Campus.*

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 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 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 2005 LRDP. 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 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 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 can be triggered if the infrastructure to serve the proposed project is constructed with excess capacity, or if the lack of infrastructure is an obstacle to growth, and that obstacle is removed by the project. As discussed in Section 4.15 Utilities, utility systems would be expanded and extended to new areas on campus as a result of the 2005 LRDP. Expansions would occur in particular onto the West Campus, 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 increased enrollment and new research programs and initiatives on the campus. 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 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 2003 UCR LRDP could be considered a precedent-setting action. Approval of specific projects under the 2003 UCR 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 2005 LRDP exceeds the development cap approved in the 1990 LRDP, and the projected enrollment growth it is intended to accommodate is a function of the State's Master Plan for Higher Education, which itself is intended to accommodate Statewide growth trends that will cause a significant increase in the number of high school graduates over the next decade. Due to the ability for the campus to grow in terms of its physical development and population more than what was approved under the 1990 LRDP, 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 2005 LRDP's environmental effects, 2005 LRDP Planning Strategies, Programs and Practices, and proposed Mitigation Measures.

5.6 ALTERNATIVES TO THE 2005 LRDP

Alternatives to the 2005 LRDP are presented in Chapter 6 (Alternatives) of this EIR.

Chapter 6 ALTERNATIVES

This chapter evaluates alternatives to the 2005 LRDP and examines the potential environmental impacts associated with each alternative. Through comparison of these alternatives to the 2005 LRDP, the relative environmental advantages and disadvantages of each are weighed and analyzed. The CEQA Guidelines require that the range of alternatives addressed in an EIR should be governed by a rule of reason. Not every conceivable alternative must be addressed, nor do infeasible alternatives need to be considered (CEQA Guidelines Section 15126.6[a]). Section 15126.6 of the CEQA Guidelines states that the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, other plans or regulatory limitations, and jurisdictional boundaries. The Guidelines state that the discussion of alternatives must focus on alternatives capable of either avoiding or substantially lessening any significant environmental effects of the project, even if the alternative would impede, to some degree, the attainment of the project objectives, which are identified in Section 3.4 (Project Description, Objectives) of this EIR, or would be more costly. The alternatives discussion need not consider alternatives whose implementation is remote or speculative, and the analysis is not presented in the same level of detail as the assessment of the project.

Based on the CEQA Guidelines, several factors need to be considered in determining the range of alternatives to be analyzed in an EIR and the level of analytical detail that should be provided for each alternative. These factors include (1) the nature of the significant impacts of the proposed project, (2) the ability of alternatives to avoid or lessen the significant impacts associated with the project, (3) the ability of the alternatives to meet the objectives of the project, and (4) the feasibility of the alternatives. The analysis in this EIR indicates that the following significant and unavoidable impacts would occur from implementation of the 2005 LRDP: agricultural resources (loss of farmland), air quality (increased emissions generated by UCR), cultural resources (demolition of historic structures), noise (increased ambient noise levels on and off campus), and traffic (additional vehicular trips and volumes). In addition, construction of facilities during the LRDP planning horizon would result in the following significant and unavoidable short-term impacts: air quality (emission of criteria pollutants), noise (construction noise and groundborne vibration), and traffic (vehicle trips by construction vehicles). Thus, the alternatives examined herein have the potential to minimize or avoid significant and unavoidable impacts to agricultural resources, air quality, cultural resources, noise, and traffic.

6.1 ALTERNATIVES TO THE PROJECT

The alternatives that are evaluated in this section include the following:

- *Alternative 1: No Project (A): No New Development*—Under this alternative, the proposed LRDP would not be implemented. No additional buildings or facilities would be constructed (beyond

previously approved projects). To the extent that existing facilities can accommodate additional students, some minor enrollment growth could occur.

- *Alternative 2: No Project (B): Continued Implementation of the 1990 LRDP*—This alternative assumes that the existing 1990 LRDP would remain in effect, student enrollment would increase to approximately 18,050 students, an additional 5.45 million gsf of new space would be developed (resulting in a future total of on-campus building space of approximately 10.13 million gsf), housing would be provided for 35 percent of student enrollment (approximately 6,318 beds), and approximately 9,446 parking spaces would be provided. For the purposes of this EIR, it is assumed that all development proposed in the 1990 LRDP would occur by 2015/16, the planning horizon for the 2005 LRDP, to allow for a plan-to-plan comparison of the 1990 LRDP and the 2005 LRDP, as articulated in Section 15126.6(e)(3)(A) of the CEQA Guidelines. Because the population growth would be limited to the levels identified in the 1990 LRDP and the additional enrollment under the 2005 LRDP would not occur, this alternative also serves as a reduced population alternative.

  Methodology for Analysis of Alternative 2. Section 15126.6(e)(3)(A) of the CEQA Guidelines states that when the project is the revision of an existing land use or regulatory plan, policy, or ongoing operation, the no project alternative will be the continuation of the existing plan, policy, or operation into the future. Therefore, under Alternative 2, the impacts of the proposed plan (e.g., the 2005 LRDP) are compared to the impacts that would occur under the existing plan (e.g., the 1990 LRDP). Compared to the 2005 LRDP, this alternative would result in approximately 1.67 million gsf less development, enrollment of approximately 6,950 fewer students, provision of housing for only 35 percent of student enrollment (compared to 50 percent for the 2005 LRDP), and a parking inventory of approximately 6,064 fewer parking spaces. Because of the reduced development and enrollment levels, impacts of this alternative would generally be less than the proposed project.

- *Alternative 3: New Development Concentrated on West Campus*—The 2005 LRDP concentrates the majority of new academic development on the East Campus, in proximity to the existing academic core. This alternative assumes the majority of new academic and residential development (e.g., approximately 90 percent) would be developed on the West Campus, with only limited infill academic development on the East Campus. The amount of additional building space, future enrollment, on-campus housing, and parking spaces would be the same the 2005 LRDP; however, higher density development on the West Campus would be required.

  Methodology for Analysis of Alternative 3. This alternative assumes the development of approximately 7.1 million gsf in a different configuration that could reduce impacts associated with development on the East Campus. Under the proposed project, significant construction noise impacts could affect off-campus residential land uses located along the eastern edge of the campus. In addition, potentially significant, but mitigable light and glare impacts on adjacent residential uses were identified for East Campus locations for which parking structures are proposed in the 2005 LRDP. This alternative would shift most development to the West Campus, and thus reduce construction noise and light and glare impacts associated with development on the East Campus.

- *Alternative 4: Off-Site Alternative*—This alternative assumes that future University development would be accommodated on an off-campus remote site. The former March Air Force Base, located approximately six miles southeast of the campus has been identified as an alternative site. March Air Force Base was realigned and became March Air Reserve Base as part of the Base realignment and Closure Act in 1996. The 6,500 acre former Air Force Base was the subject of a General Plan and Master EIR prepared by the March Joint Powers Authority (JPA). Under this alternative, all future development proposed in the 2005 LRDP would be developed at the off-campus site.

  Methodology for Analysis of Alternative 4. This alternative assumes the same development allocation of 7.1 new million gsf as the 2005 LRDP, at an off-campus site (consistent with Section 15126.6(f)(2) of the CEQA Guidelines), to determine whether relocation of future campus development would reduce or avoid the on-campus impacts associated with an increase in student enrollment and additional development. As no new development would occur on campus, no site-specific affects of the LRDP would occur on the UC R campus under this alternative.

- *Alternative 5: Reduced On-Campus Housing*—This alternative assumes that the on-campus housing goal would remain at 35 percent of student enrollment (as per the 1990 LRDP), instead of the 50 percent on-campus housing goal identified in the 2005 LRDP. With a total enrollment of 25,000 students, this alternative would provide housing for approximately 8,750 students. All other non-housing development would remain the same as the 2005 LRDP, and 25,000 students would be enrolled.

  Methodology for Analysis of Alternative 5. With less housing, this alternative would provide housing for approximately 8,750 students (3,750 fewer than the proposed LRDP), result in approximately 1 million gsf less development, and provide approximately 1,540 fewer parking spaces (for on-campus residents). Although future enrollment would remain at 25,000 students, this alternative serves as a reduced project alternative because less development would occur, which could reduce both construction and operational impacts.

Table 6-1 provides a summary of the major elements of the five alternatives.

Table 6-1 Summary Comparison of Alternatives to the 2005 LRDP

Element	*2005 LRDP*	*Alt. 1 No Project A*	*Alt 2 No Project B (1990 LRDP)*	*Alt 3 High Density on West Campus*	*Alt4 Off-Site*	*Alt 5 35% Housing*
New Square Footage	7.1 million	0	4.8 million	7.1 million	7.1 million	6.10million
Future Total Square Footage	11.8 million	4.7 million	10.13 million	11.8 Million	11.8 Million	10.8 Million
Student Enrollment	25,000	12,097	18,050	25,000	25,000	25,000
Housing (Beds)	12,500	4,147	6,318	12,500	12,500	8,750
Parking Spaces	15,868	8,832	9,446	15,868	15,868	14,000

Source: EIP Associates, 2003

Baseline 2000–01—4.8 million gsf

For operational impacts, the analysis of impacts is generally based upon one of three factors: (1) population (e.g., an increase in the campus population); (2) quantity of development (e.g., an increase in the amount of building space); or (3) location of development (e.g., development occurring at a location which is currently undeveloped). Table 4-1 (Section 4.0, Introduction to the Analysis) summarizes the factor that generally determines impacts for each environmental resource analyzed in this EIR. This is the also the basis for analysis of the potential impacts of each of the alternatives to the proposed project. That is, alternatives that would result in a different campus population than the proposed project are anticipated to have different impacts than the proposed project for those resources affected by population. Similarly, where campus population remains the same, impacts for those resources affected by population would also remain similar to the proposed project.

6.2 ALTERNATIVES NOT CONSIDERED IN THIS EIR

During the scoping process, other alternatives were also considered, but were found to be infeasible or failed to reduce project impacts, as described in the following sections.

6.2.1 High-Density Development on the East Campus

This alternative would accommodate all academic, administrative, and housing on the East Campus, in proximity to the existing array of academic, student and other support services. Land-intensive uses, such as recreation and parking, and the support facilities necessary for those uses would be developed on the West Campus. This development pattern would require increased density on the East Campus, which would reduce open space, require taller buildings, and fundamentally alter the campus character. These changes could increase the severity of some impacts, such as aesthetics, biological resources, and land use. Therefore, this conceptual alternative is not analyzed further.

6.2.2 Development along University Avenue

Under this conceptual alternative, some portion of future campus space would be accommodated along University Avenue, in both single-purpose and mixed-use development (e.g. housing over commercial or academic space). A portion of the proposed development (e.g., land-intensive uses such as recreation and parking) would still occur on the existing campus, while most academic and housing would be located along University Avenue on land that is currently not owned by the University. As a result, this conceptual alternative would involve substantial land acquisition along University Avenue, or the leasing of space that presumably would be developed by third parties for use by the campus. Existing commercial and other uses along University Avenue in proximity to the campus could be displaced. Development along University Ave. would spread out development, which would discourage walking as a form of transportation to move between campus facilities. Thus, there would likely be more vehicular transit and, as a result, higher air quality and traffic impacts. Because the feasibility of implementing this alternative would be limited by the availability and cost of land acquisition and the cost of leasing and would result in secondary impacts from displacement of existing uses, this conceptual alternative is not analyzed further.

6.2.3 Higher Enrollment Growth

Under this conceptual alternative, enrollment growth would be allowed to reach 30,000 students, which was identified as a "mature" campus size in the 1990 LRDP. Because this would represent an increase of approximately 5,000 students over the proposed plan, additional square footage would be needed. To achieve that level of growth by 2015/16, an enrollment increase of approximately 1,400 students per year would be needed. The pace of development required to sustain this magnitude of enrollment increase would increase construction-related impacts and intensify operational impacts, particularly related to traffic. Therefore, this conceptual alternative is not analyzed further.

6.3 ANALYSIS OF ALTERNATIVES TO THE PROPOSED PROJECT

This section provides an analysis of the environmental impacts of each of the project alternatives, summarized previously in Section 6.1, including a comparison of the potential impacts of the alternative to the proposed project, as well as the impacts that would result from implementation of the project alternatives themselves.

Five alternatives are analyzed in this section, including the No Project alternative. The No Project Alternative 1 results in no new development on the campus and is analyzed to identify the circumstances that would result if the project does not proceed. The No Project Alternative 2 alternative allows continued implementation of the 1990 LRDP, and is analyzed to allow The Regents to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. Alternative 3 analyzes an alternative configuration, Alternative 4 analyzes an off-site alternative, and Alternative 5 analyzes a reduced development alternative. All of these alternatives have the potential to avoid or reduce the significant impacts that would result from implementation of the 2005 LRDP.

To provide a consistent basis for comparison, it is assumed that for each of the Alternatives, existing campus Programs and Practices would be continued, and Mitigation Measures identified for the 2005 LRDP would be implemented as appropriate for each of the Alternatives. For Alternative 2 (Continuation of the 1990 LRDP), some of the Mitigation Measures identified in the 1990 LRDP Final EIR may be more applicable, since they relate to the development proposals contained in the 1990 LRDP.

6.3.1 Alternative 1 (No Project A)

Description

This alternative assumes that no additional development and growth in the campus population would occur. Enrollment would remain at existing levels of approximately 12,703 students, and no new construction would occur. The percentage of students that are housed on campus would not increase and would remain at 35 percent.

Comparison of Environmental Effects

No alterations to the campus would occur (with the exception of previously-approved development) and all campus facilities would generally remain in their current condition. The approximately 1,112 acres of land that comprise the campus would remain as is. Some minor enrollment growth could be provided at the campus, to the extent that existing classrooms and other facilities could accommodate additional students. No new development related to increased enrollment or academic program needs would occur. None of the impacts of the proposed project would result under this alternative. Under this alternative, future conditions in the vicinity of the proposed site would generally be the same as existing conditions, which were described in the environmental setting section for each environmental topic in Chapter 4, including aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, noise and vibration, population and housing, public services, recreation, transportation and traffic, and utilities and service systems.

6.3.2 Alternative 2 (No Project B—Continuation of 1990 LRDP)

Description

This alternative assumes the 1990 LRDP would continue to guide land use on the campus, which would result in the enrollment of 18,050 students (an increase of approximately 5,347 above 2000/01 enrollment) and development of approximately 4.8 million gsf over the LRDP baseline (for a future total of approximately 10.13 million gsf of occupied space). For purposes of this analysis, it is assumed that the development levels included in the 1990 LRDP would be achieved by the 2015/16 academic year to allow for a plan-to-plan comparison of the 1990 LRDP and the 2005 LRDP as articulated in Section 15126.6(e)(3)(A) of the CEQA Guidelines. Compared to the proposed project (the 2005 LRDP), this alternative would result in the enrollment of approximately 6,950 fewer students, 1.67 million gsf less development, 6,318 fewer students housed in campus-controlled housing, and 6,182 fewer parking spaces. Because the population growth would be limited to the levels identified in the 1990 LRDP and enrollment growth would be less than the proposed 2005 LRDP, this alternative also serves as a reduced population alternative.

Comparison of Environmental Effects

Aesthetics

Under Alternative 2, 1.67 million gsf less development would occur, which could result in the development of fewer buildings and a reduced density of future development. As a result, aesthetic impacts would generally be reduced compared to the proposed project.

Impact 4.1-1: As the Carillon Mall would continue to be designated as open space and the Lower Intramural Field would continue to be designated as CHASS, Student Services, Administration, Parking, BCOE, and Open Space under continued implementation of the 1990 LRDP, development would occur within these areas (where scenic views of the adjacent Box Springs Mountains are available), and no

substantial adverse effect on a scenic vista would occur. Thus, this impact would be comparable to the proposed project.

Impact 4.1-2: With development of approximately 4.8 million gsf of academic and support facilities under continued implementation of the 1990 LRDP, future development could substantially degrade the visual character or quality of the campus and the immediate surrounding area. Assuming continued implementation of applicable Mitigation Measures (including those related to aesthetics) identified in the 1990 LRDP Final EIR and continued implementation of existing Programs and Practices, this impact would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.1-3: With development of approximately 4.8 million gsf of academic and support facilities under continued implementation of the 1990 LRDP, future development could create new sources of substantial light or glare in the campus area or vicinity that would adversely affect day or nighttime views from adjacent land uses. Assuming implementation of applicable Mitigation Measures, this impact would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Agricultural Resources

Under Alternative 2, less development would occur, which could result in the development of fewer buildings, and a reduced density of future development, which could reduce the extent of development on the West Campus. As a result, agricultural resource impacts would generally be less than the proposed project.

Impact 4.2-1: With continued implementation of the 1990 LRDP, it is assumed that future housing would be developed on both the East and West Campuses. As approximately 1.67 million gsf less development would occur, the amount of land area occupied by housing could be reduced, compared to the proposed project. However, if future housing is developed at a lower density, the same amount of land could be occupied. It is assumed that the loss of agricultural land would be less than the proposed project. Although the severity of this impact would be less than the proposed project, no feasible mitigation has been identified to reduce this impact, and the impact would remain *significant and unavoidable*.

Impact 4.2-2: With continued implementation of the 1990 LRDP, development would not conflict with existing zoning for agricultural use or a Williamson Act contract, as there are no areas on site that are zoned for agricultural uses or covered by Williamson Act contracts. Thus, *no impact* would occur, comparable to the proposed project.

Impact 4.2-3: With continued implementation of the 1990 LRDP, development would not involve other changes that could convert farmland to nonagricultural use, and impacts would be *less than significant*. As less on-campus development would occur, this impact would be less than under the proposed project.

Air Quality

Under Alternative 2, continued implementation of the 1990 LRDP would result in the enrollment of approximately 6,950 fewer students and 1.67 million gsf less overall development than the proposed project. This would generally result in air quality impacts that are less than the proposed project.

Impact 4.3-1: Continued implementation of the 1990 LRDP would not conflict with or obstruct implementation of the Air Quality Management Plan for the South Coast Air Basin. The 1990 LRDP was included in the projections utilized in the formulation of the AQMP and thus continued implementation would not result in an exceedance of the population projections for Riverside County beyond that level already projected. Thus, with continued implementation of existing Programs and Practices, this impact would be *less than significant*. As this alternative would result in less development and lower student enrollment than the proposed project, impacts would be less than the proposed project.

Impact 4.3-2: Continued implementation of the 1990 LRDP would result in construction activities that would generate criteria pollutants, which could contribute substantially to an existing or projected air quality violation. In general, the daily maximum amount of construction that could occur under the 1990 LRDP would be the same as the 2005 LRDP. However, because the 2005 LRDP would result in approximately 1.67 million gsf of additional academic and support facilities on the UCR campus than the 1990 LRDP, the duration of construction would be greater. As indicated in the project-specific analysis, it is difficult to precisely quantify daily emissions, due to the normal variability in construction activities. Assuming the same amount of peak construction activity on a given day, the 1990 LRDP would have the potential to exceed thresholds for NOx. Even with implementation of the identified Mitigation Measures, impacts would remain *significant and unavoidable*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.3-3: Continued implementation of the 1990 LRDP could result in an increase in daily emissions associated with stationary sources for space and water heating, landscape maintenance activities, and use of consumer products, in addition to increased vehicular trips and their associated emissions. Although this alternative would result in less development and fewer students, this reduction in development or enrollment potential is unlikely to reduce air emissions below applicable thresholds and impacts would be *significant and unavoidable*, despite implementation of the identified Mitigation Measures. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.3-4: If a project would result in a one percent per year reduction in project emissions of CO, VOC, NOx, SOx, and PM10, then it would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard. Under the proposed project, implementation of the TDM program, energy conservation efforts, and use of Best Available Control Technology programs to reduce the emissions that would otherwise be generated by the campus would result in emission reductions that are substantially more than one percent on an annual basis. As these air quality management programs are mandated by the SCAQMP, they would remain in effect under the 1990 LRDP. Therefore, this

alternative would result in impacts similar to the proposed project, and impacts would be *less than significant*.

Impact 4.3-5: Continued implementation of the 1990 LRDP could result in substantial pollutant concentrations in the form of CO hotspots at intersections, due to increased traffic congestion. The proposed project would result in CO concentrations well below federal and State 1- and 8-hour standards. Because less development would occur under the 1990 LRDP, vehicle trip generation would be less than the proposed project and CO concentrations generated under this alternative would also be below federal and State standards. Impacts would therefore be *less than significant*, and would be less than the proposed project.

Impact 4.3-6: Continued implementation of the 1990 LRDP would result in the emission of toxic air contaminant by teaching and research laboratories, greenhouses, and other research facilities. The proposed project would result in cancer risks that would not exceed thresholds for receptors on campus and off campus. Results of the chronic and acute noncancer health effects assessment indicate that all of the hazard index values for each organ system would be less than 1.0. As this alternative would result in less development than the proposed project, fewer facilities that could emit toxic air contaminants would be developed, resulting in even lower risks than those identified as less than significant for the proposed project. Impacts would be *less than significant*, and would be less than the proposed project.

Impact 4.3-7: Continued implementation of the 1990 LRDP would result in the generation of odors as a result of construction activities, cooking, and trash receptacles on campus. Odors associated with construction would be isolated to the immediate vicinity of the site and activity. Odors from cooking would be similar to existing housing and food service uses on the campus. Trash receptacles would have lids and be emptied on a regular basis, before potentially substantial odors have a chance to develop. Therefore, this alternative would not create objectionable odors affecting a substantial number of people. As this alternative would result in less development than the proposed project, odors associated with construction and trash would be less than the proposed project. Impacts would be *less than significant* and would be less than the proposed project.

Biological Resources

Under Alternative 2, 1.67 million gsf less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. As a result, biological resource impacts would generally be less than the proposed project.

Impact 4.4-1: Continued implementation of the 1990 LRDP could result in adverse impacts to candidate, sensitive, or special status plants and wildlife species, due to the location and extent of future development. With implementation of applicable mitigation measures, these impacts would be *less than significant*. As less development would occur, impacts would be less than the proposed project.

Impact 4.4-2: Continued implementation of the 1990 LRDP could affect the designated habitat for the California Gnatcatcher in the southeastern portion of the campus and result in the modification or loss of riparian habitat. However, the 1990 LRDP identified comparably less area for development within the

gnatcatcher habitat than the proposed project, but proposed development in proximity to riparian habitat could result in adverse impacts to such habitat. Thus overall, less designated habitat area would be disturbed. Assuming implementation of applicable mitigation measures, impacts would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.4-3: Continued implementation of the 1990 LRDP could result in a substantial adverse effect on federally protected wetlands due to development adjacent to existing on-campus arroyos. With implementation of applicable Mitigation Measures, impacts would be *less than significant*. Since less total development would occur, impacts would be less than the proposed project.

Impact 4.4-4: Continued implementation of the 1990 LRDP could interfere with the movement of native resident or migratory wildlife species or corridors. As the southeast hills would remain designated as open space under the 1990 LRDP, potential affects to wildlife movement would be limited to development within or adjacent to existing arroyos. With the inclusion of applicable Mitigation Measures, this impact would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.4-5: Continued implementation of the 1990 LRDP would be in substantial conformance with local applicable policies protecting biological resources. This impact would be *less than significant*. This impact would be comparable to the proposed project.

Impact 4.4-6: Continued implementation of the 1990 LRDP would be in substantial conformance with local applicable policies protecting biological resources or the provisions of an adopted habitat conservation plan and *no impact* would result. This impact would be comparable to the proposed project.

Cultural Resources

Under Alternative 2, 1.67 million gsf less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, cultural resource impacts would generally be less than the proposed project.

Impact 4.5-1: Continued implementation of the 1990 LRDP could result in renovation or modification of historic or potentially historic structures. These modifications could adversely affect the historical significance of these structures by altering their character or setting. With implementation of applicable Mitigation Measures, impacts would be *less than significant*. Since the number of historic or potentially historic buildings that could be subject to modification would be the same under the 1990 or 2005 LRDP, impacts would be comparable to the proposed project.

Impact 4.5-2: Continued implementation of the 1990 LRDP could result in the demolition of historical or potentially historic structures. Thus, similar to the proposed project, *significant impacts* associated with the demolition of historic or potentially historic structures would result. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.5-3: Continued implementation of the 1990 LRDP could result in damage or destruction of previously unknown archaeological resources due to construction activities. With continuation of identified existing campus Program and Practices, this impact would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.5-4: Continued implementation of the 1990 LRDP could result in damage or destruction of previously unknown paleontological resources as a result of construction activities. Although the rock and sediment types that underlie the Campus are unlikely to be fossil-bearing, encountering fossils during earth-disturbing construction activities remains a possibility. With implementation of applicable Mitigation Measures, impacts would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.5-5: Continued implementation of the 1990 LRDP could result in the disturbance of human remains as a result of construction activities. With continued implementation of the identified campus Programs and Practices, impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Geology and Soils

Under continued implementation of the 1990 LRDP, or Alternative 2, less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, geology and soil impacts would generally be less than the proposed project.

Impact 4.6-1: Continued implementation of the 1990 LRDP could expose people and/or structures to potentially substantial adverse effects related to seismic ground shaking due to new structural development on campus. However, with continuation of existing campus Programs and Practices related to preparation of a geotechnical report and adherence to the recommendations of the report (per the University Policy for Seismic Safety), this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.6-2: Continued implementation of the 1990 LRDP could result in substantial soil erosion and the loss of topsoil as a result of construction activities; however, with continuation of relevant existing campus Programs and Practices related to construction activities, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.6-3: Continued implementation of the 1990 LRDP could result in development in areas subject to soil hazards such as landsliding, lateral spreading, subsidence, liquefaction, collapse, or differential settlement. While less development would occur, in particular in the southeast hills, development could be sited on areas with unstable soil conditions. However, with continued implementation of existing Programs and Practices related to the preparation of a geotechnical report and adherence to the recommendations of the report, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.6-4: Alternative 2 could result in development on expansive soils. While less development would occur, development could be sited in areas with expansive soils. However, with continued implementation of all applicable regulations and existing Programs and Practices related to the preparation of a geotechnical report and adherence to the recommendations of the report, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Hazards and Hazardous Materials

Under continuation of the 1990 LRDP, or Alternative 2, less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. As a result, hazards and hazardous materials impacts would generally be less than the proposed project.

Impact 4.7-1: Alternative 2 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). Hazardous materials would be handled in a similar manner as under the proposed project, although the increased quantities of hazardous materials would likely be less. With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance with applicable regulations), impacts would be *less than significant*. As less development would occur under this alternative, the incremental increase in the transport, usage, disposal, and storage of hazardous materials would be reduced, and this impact would be less than the proposed project.

Impact 4.7-2: Alternative 2 could expose construction workers and campus occupants to significant health or safety risks through renovation or demolition of buildings, or relocation of underground utilities that contain hazardous materials. As less development would occur, the potential for risks from renovation, demolition, or relocation of utilities would be less, although these effects could still occur. With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance with applicable regulations) and continued compliance with federal and State health and safety laws and regulations, impacts would be *less than significant*. As less development would occur under this alternative, the potential for hazardous materials to be encountered during construction would be reduced, and this impact would be less than the proposed project.

Impact 4.7-3: Continued implementation of the 1990 LRDP would increase the amount of hazardous materials used on and transported to and from the campus, which could expose people to potential health risks in the event of an accident or accidental release. Hazardous materials would be handled in a similar manner as under the proposed project, although quantities of materials transported would likely be less. With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance with applicable regulations) and continued compliance with federal and State health and safety laws and regulations, risks associated with an accident or accidental release would be *less than significant*. As less development would occur under this alternative, the potential for an accident or accidental release involving hazardous materials would be reduced, and this impact would be less than the proposed project.

Impact 4.7-4: Continued implementation of the 1990 LRDP could create a significant risk of exposure of construction workers and campus occupants to contaminated soil or groundwater. With implementation of applicable Mitigation Measures related to soil and groundwater contamination, impacts would be *less than significant*. As less development would occur under this alternative, the potential for contaminated soil and groundwater to be encountered during construction would be reduced, and this impact would be less than the proposed project.

Impact 4.7-5: Continued implementation of the 1990 LRDP could result in hazardous emissions or require the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. With continued implementation of existing Programs and Practices (or equivalent measures) related to the transport, use, disposal, or storage of hazardous materials, impacts within a quarter mile of an existing or proposed school would be *less than significant*. As less development would occur under this alternative, the potential for hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school would be reduced, and this impact would be less than the proposed project.

Impact 4.7-6: Alternative 2 would not result in construction on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. The 1990 LRDP proposed to retain the agricultural teaching and research fields south of Martin Luther King Boulevard, including the location of a former site that was previously included on the Cortese list of hazardous materials sites; however, no development would occur in this area. Thus, as no construction would occur on any current or former listed sites, the 2005 LRDP does not propose development on these sites as well, so this impact would be comparable to the proposed project.

Impact 4.7-7: Alternative 2 would not impair implementation of, or physically interfere with, an adopted emergency response or emergency evacuation plan. The existing UCR Campus Emergency Operation plan was developed with knowledge of the land use and development patterns proposed in the 1990 LRDP; thus continued implementation of the 1990 LRDP would not impair the implementation of the adopted emergency response plan. Construction and operation activities could temporarily obstruct emergency access routes; however, with implementation of applicable mitigation measures, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.7-8: Continued implementation of the 1990 LRDP could result in development of facilities in the southeastern portion of the campus (adjacent to the southeastern hills) and could expose people or structures to a risk of loss, injury, or death involving wildland fires. Although the 1990 LRDP proposed less development in proximity to the southeast hills (compared to the 2005 LRDP), people or structures could still be exposed to a risk of loss, injury, or death involving wildland fires; however, implementation of applicable mitigation measures would reduce this risk to a *less-than-significant* level. As less development would occur under this alternative, this impact would be less than the proposed project.

Hydrology and Water Quality

Under continued implementation of the 1990 LRDP, or Alternative 2, less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, hydrology and water quality impacts would generally be less than the proposed project.

Impact 4.8-1: Alternative 2 would not violate existing water quality standards or waste discharge requirements. With continued adherence to existing Programs and Practices and compliance with waste discharge regulations and NPDES permit conditions, these impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.8-2: Continued implementation of the 1990 LRDP would not substantially deplete groundwater supplies or interfere with groundwater recharge. Since the campus is not identified as a significant groundwater recharge area, the reduction in development would not affect groundwater recharge. In addition, the reduced quantity of development in comparison to the proposed project would result in less demands on water. As water supply would be adequate for the proposed project, it would be sufficient for this alternative, which would result in fewer demands on the water supply. With continued implementation of existing Programs and Practices applicable to water conservation measures, this impact would be *less than significant*. As less development would occur under this alternative, potential demand on groundwater supplies would be reduced, and this impact would be less than the proposed project.

Impact 4.8-3: Continued implementation of the 1990 LRDP would not substantially alter drainage patterns on campus and would not result in substantial erosion or siltation on or off site. With continued implementation of Programs and Practices related to site drainage and erosion control, impacts would be *less than significant*. As less development would occur under this alternative, the potential for changes in drainage patterns or soil erosion would be reduced, and this impact would be less than the proposed project.

Impact 4.8-4: Alternative 2 would not substantially alter site drainage patterns or substantially increase the rate or amount of surface runoff and would not result in flooding either on or off site. With continued implementation of existing campus Programs and Practices related to site drainage, impacts would be *less than significant*. As less development would occur under this alternative, the potential for changes in drainage patterns or flooding would be reduced, and this impact would be less than the proposed project.

Impact 4.8-5: Alternative 2 would not create runoff that would exceed the capacity of existing storm drain systems or provide substantial sources of polluted runoff. With continued implementation of campus Programs and Practices related to site drainage and storm drain improvements, impacts would be *less than significant*. As less development would occur under this alternative, the potential for runoff to exceed storm drain capacity would be reduced, and this impact would be less than the proposed project.

Impact 4.8-6: Continued implementation of the 1990 LRDP could require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems; however, the construction or expansion of such systems would not result in significant impacts. With continued implementation of applicable campus Programs and Practices, impacts would be *less than significant*. As less development would occur under this alternative, the potential for major expansions of storm drain systems would be reduced, and this impact would be less than the proposed project.

Impact 4.8-7: Alternative 2 would not otherwise substantially degrade water quality. With continued adherence to waste discharge regulations and NPDES permit conditions, these impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.8-8: Alternative 2 would not place housing within a 100-year flood hazard area, and *no impact* would occur. As the 2005 LRDP also does not propose to place housing within a 100-year flood hazard area, this impact would be comparable to the proposed project.

Impact 4.8-9: Alternative 2 would place structures within a 100-year flood hazard area; however, such development would not impede or redirect flood flows. The 1990 LRDP proposed to retain the areas along the former University Arroyo as open space and other uses such as CHASS, Administrative, Student Services, Parking, and College of Engineering. With implementation of applicable Mitigation Measures, this impact would be the same. Development would occur within the 100-year flood hazard area under this alternative, this impact would be comparable to the proposed project.

Impact 4.8-10: Continued implementation of the 1990 LRDP could alter site drainage patterns but would not expose people or structures to significant risk of loss, injury, or death involving flooding. With continued implementation of existing campus Programs and Practices related to site drainage, impacts would be *less than significant*. As less development would occur under this alternative, the potential for changes in drainage patterns to result in flooding would be reduced, and this impact would be less than the proposed project.

Impact 4.8-11: Continued implementation of the 1990 LRDP would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. As the campus is located inland and is not in proximity to an open water body, no risk from seiche or tsunami would occur, similar to the proposed project. With continued implementation of existing campus Programs and Practices related to protection from hazards such as mudflows, impacts would be *less than significant*. As less development would occur under this alternative, the potential for exposure to risk of mudflows would be reduced, and this impact would be less than the proposed project.

Land Use and Planning

Under continued implementation of the 1990 LRDP, or Alternative 2, less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, land use impacts would generally be less than the proposed project. However, future multidisciplinary projects

would require LRDP amendments as the 1990 LRDP land use designations are discipline/college specific.

Impact 4.9-1: Alternative 2 would result in changes in on-campus land uses similar to the proposed project, although less overall development would occur. These changes could be substantially incompatible with existing adjacent land uses. Under the 1990 LRDP land use plan, student housing, academic buildings, parking, and campus support uses could be developed around the campus perimeter, at locations that are in proximity to existing off-campus residential uses, which could result in land use incompatibilities. Implementation of existing Programs and Practices as well as mitigation measures identified in the 1990 LRDP Final EIR (which specify setbacks, fences, berms, and landscaping) would reduce potential impacts to a *less-than-significant* level. As less development would occur under the 1990 LRDP, this impact would be less than the proposed project.

Impact 4.9-2: Alternative 2 would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. Under the 1990 LRDP, additional student housing would be provided, the transportation demand management (or alternative transportation) program would continue, energy conservation efforts (per Title 24 requirements) would continue, and Best Available Control Technology programs would continue to reduce air emissions. Thus, with continued implementation of existing Programs and Practices, impacts would be *less than significant*. As similar programs would occur under the proposed project, this impact would be comparable to the proposed project.

Impact 4.9-3: Continued implementation of the 1990 LRDP would not conflict with any applicable habitat conservation plan or natural community conservation plan. As the proposed Riverside County Multi-Species Habitat Conservation Plan does not designate any portion of the UCR campus as protected habitat, *no impact* would occur, comparable to the proposed project.

Noise

Under Alternative 2, less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, noise impacts would generally be less than the proposed project.

Impact 4.10-1: Continued implementation of the 1990 LRDP would not expose new on-campus student residential uses to noise levels in excess of the State's 45 dBA CNEL interior noise standard. Implementation of existing Programs and Practices and adherence to the applicable noise requirements would result in project design features in on-campus housing to reduce interior noise levels, and this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-2: Continued implementation of the 1990 LRDP could result in construction activities that generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. Development under the 1990 LRDP could occur in proximity to occupied on-campus buildings,

including on-campus housing, which would expose persons to groundborne noise and vibration (e.g., vibration levels could reach up to 87 VdB at buildings within 25 feet of construction). Even with implementation of the identified Mitigation Measures, this impact would be *significant and unavoidable*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-3: Construction associated with the proposed project would not result in groundborne vibration velocity levels that would exceed the Federal Railway Administration's 80 VdB vibration impact threshold for residences off campus. As such, continued implementation of the 1990 LRDP would not result in construction activities that would generate and expose persons off campus to excessive groundborne vibration or groundborne noise levels, since less development would occur under this alternative. This impact would be *less than significant,* and would be less than the proposed project.

Impact 4.10-4: The background operational vibration levels for the proposed project would be expected to average around 50 VdB, which is substantially less than the 65 VdB threshold for sensitive on-campus research buildings, 80 VdB at residences and student housing buildings, and 83 VdB at other institutional buildings. Thus, with less overall development, continued implementation of the 1990 LRDP would not generate and expose persons on or off campus to excessive groundborne vibration or groundborne noise levels. Implementation of the 1990 LRDP would not result operational activities that would produce substantial levels of groundborne noise or vibration that could affect either on- or off-campus persons, and this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-5: Continued implementation of the 1990 LRDP would generate increased local traffic volumes, but would not cause a substantial permanent increase in ambient noise levels at on- or off-campus locations. The proposed project would result in increased traffic, but these increases would not result in a substantial permanent increase in ambient noise levels. Under the 1990 LRDP, less development would occur and therefore less traffic would also result. Therefore, any potential increase in ambient noise levels would be less than the proposed project, and would also be *less than significant*.

Impact 4.10-6: Continued implementation of the 1990 LRDP could add new stationary sources noise, but would not cause a substantial permanent on- or off-campus increase in ambient noise levels. The proposed project would result in additional stationary noise sources, such as HVAC equipment, which would generate levels of less than 51 dBA Leq with shielding. As existing campus noise levels average 54 to 69 dBA Leq, the additional sources of stationary noise would not result in a substantial permanent increase in ambient noise levels of 5 dBA CNEL or more. Under the 1990 LRDP, less development would occur and therefore fewer sources of stationary noise would also result. Therefore, any potential increase in ambient noise levels would be less than the proposed project, and would also be *less than significant*.

Impact 4.10-7: Continued implementation of the 1990 LRDP could result in construction that could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. Depending on the location and type of development, construction noise levels could temporarily reach

up to 83 dBA L_{eq} during the daytime at nearby on-campus buildings, which could be an increase of more than 10.0 dBA Leq over the existing daytime noise levels at these buildings. As such, construction noise levels could substantially increase existing noise levels at on-campus classrooms, office, and residential uses. Even with implementation of existing Practices and Programs, impacts would remain *significant and unavoidable*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-8: Continued implementation of the 1990 LRDP would result in construction that could result in substantial temporary or periodic increases in ambient noise levels at locations off campus. Construction noise would periodically increase noise levels by more than 10 dBA at selected off-campus locations, depending on the location and type of construction. Although implementation of existing Practices and Programs could reduce impacts, impacts would remain *significant and unavoidable*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-9: Continued implementation of the 1990 LRDP could result in temporary or periodic increases in ambient noise levels due to special events. Under the 1990 LRDP, special events, such as athletic and cultural events could occur and result in minor increases in noise levels. As the number of students living at the campus would increase from full implementation of the 1990 LRDP, the number of these events would also increase. Although these events could occur on more days per year they would not result in substantial temporary or periodic increases in ambient noise levels. Thus, this impact would be *less than significant*. As less development and lower enrollment levels would occur under this alternative, this impact would be less than the proposed project.

Population and Housing

Under continued implementation of the 1990 LRDP, or Alternative 2, less development and lower enrollment levels would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, population and housing impacts would generally be less than the proposed project.

Impact 4.11-1: Continued implementation of the 1990 LRDP would increase enrollment and employment, but would not directly induce substantial population growth in the area. Under the proposed project, student enrollment would generally double, resulting in a comparable increase in faculty and staff, which would directly induce growth in the surrounding area. Under the 1990 LRDP student enrollment would increase by approximately 5,347 students over existing conditions. An increase in UCR employees would occur in proportion with the student increase, which would result in an increase in the campus population of approximately 2,039 persons, plus associated dependents. The increase in the campus population would be approximately 43 percent—nearly half—of the increase that would occur under the proposed project. Impacts on population in the City, County, and region would be proportionally reduced. Thus, continued implementation of the 1990 LRDP would not directly induce substantial population growth, and this impact would be less than the proposed project, would be *less than significant*.

Impact 4.11-2: Alternative 2, like the project, would result in an increased demand for on-campus housing. Population growth on campus would result in a total enrollment level of 18,050 students, rather than 25,000 students under the proposed project. With 1990 LRDP goal of providing on campus housing for 35 percent of the students, a total of 6,318 beds (an additional 2,170 beds) would be provided on campus, compared to 8,353 added under the proposed project to meet 50 percent of 25,000. Assuming that the total demand for housing in the City remains constant (62% of students, inclusive of those residing on Campus), the increase in enrollment and campus population under the 1990 would increase demands for housing in the City, and in the County and region to a lesser extent. With a population of 18,050 students and 6,318 beds provided on campus, 27%, or 4,847 students would reside off Campus, which would be an increase over current conditions, where 3,729 students reside off campus. This alternative would thus place more demand for housing located off campus. Increased demands for off-campus housing would place additional pressure on rental markets, potentially increasing rent costs. Due to higher market demands, persons otherwise inclined to reside in the City may be required to seek housing elsewhere in markets with less demands. Due to increased demand on housing within the City, impacts would more severe than the proposed project, and would be *significant and unavoidable*, and greater than the proposed project.

Impact 4.11-3: Alternative 2 would not displace existing on-campus residents but would create additional demand for housing. Similar to the proposed project, the 1990 LRDP proposed to redevelop the existing Canyon Crest Family Student Housing complex, and demolish existing units as new units were developed. Thus, no existing residents would be displaced, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.11-4: Alternative 2 would not displace substantial numbers of people that would necessitate the construction of replacement housing elsewhere. Similar to the proposed project, the 1990 LRDP proposed to redevelop the existing Canyon Crest Family Student Housing complex, and demolish existing units as new units were developed. Thus, a substantial number of people would not be displaced, and this impact would be *less than significant*, comparable to the proposed project.

Public Services

With continued implementation of the 1990 LRDP under Alternative 2, less development and lower enrollment levels would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, impacts to public services would generally be less than the proposed project.

Impact 4.12-1: Alternative 2 would not result in significant environmental effects associated with the provision of new or physically altered fire protection facilities to maintain acceptable response times and fire flows. The additional 4.8 million gsf of development that would occur under the 1990 LRDP would increase the demand for fire protection services; however, continued compliance with applicable fire safety and building design requirements would reduce potential impacts. Development would occur entirely within campus boundaries, and thus would not result in any increase in the distance between the existing Riverside City fire stations and the campus. With continued implementation of existing relevant

Programs and Practices, and assuming that the City of Riverside maintains and staff the existing fire stations near the campus, future on-campus development would continue to be served with a five-minute response time by the RFD and no increase in service response time is anticipated, and this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.12-2: Continued implementation of the 1990 LRDP would not result in significant environmental impacts associated with the provision of new or altered police protection facilities to maintain applicable service levels. The UCR Police Department may need to purchase additional equipment and hire additional personnel, which could require modification of the existing UCR police department station. However, minor expansion of the existing on-campus UCRPD facilities is unlikely to result in significant impacts. With continued implementation of existing applicable Programs and Practices, and this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.12-3: Alternative 2 would increase the number of school-age children in local school districts, including the Riverside Unified School District. The increase in the amount of academic and staff employees under implementation of the 1990 LRDP could indirectly result in the need to accommodate additional students in the local schools around the Campus. The proposed project would result in an increase in the number of students attending RUSD schools, although this increase would be below the planned increase in District capacity. The amount of academic and staff employees projected for the 1990 LRDP would be less than the amount projected for the proposed project; thus, Alternative 2 would result in even fewer school-age children that would attend local school districts, and this impact would be *less than significant*. As fewer students would attend RUSD schools, this impact would be less than the proposed project.

Impact 4.12-4: Continued implementation of the 1990 LRDP would not result in significant environmental impacts associated with the provision of new or altered library facilities to meet demand for library services. The increase in faculty, staff, and commuter students under this alternative could increase the demand for City and County library services. However, since the amount of faculty, staff, and students would be less than the proposed project, the impact associated with additional demands for library services would also be less severe. This impact would be less in magnitude than the proposed project, and would be *less than significant*.

Recreation

Under Alternative 2, less development and lower enrollment levels would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, recreation impacts would generally be less than the proposed project.

Impact 4.13-1: Alternative 2 would increase the campus population and could result in additional demand for recreational space. The 1990 LRDP would provide for development of on-campus

recreational facilities designed to meet the enrollment and population projections contained in the 1990 LRDP, and this impact would be *less than significant*. As the campus population would be less under this alternative, this impact would be less than the proposed project.

Impact 4.13-2: Alternative 2 would include recreational facilities that may have an adverse physical effect on the environment. The 1990 LRDP would provide for development of on-campus recreational facilities, which would not result in impacts beyond those identified for the specific resources analyzed. Thus this impact would be *less than significant*, comparable to the proposed project.

Impact 4.13-3: Alternative 2 could result in the conversion of existing recreational fields to non-recreational uses. Under the 1990 LRDP, new recreational space or facilities would be developed to replace existing recreational facilities that would be removed by other development. Thus, this impact would be *less than significant*, comparable to the proposed project.

Transportation/Traffic

Under Alternative 2, continued implementation of the 1990 LRDP would result in the enrollment of approximately 6,950 fewer students and 1.67 million gsf less overall development than the proposed project. This would generally result in traffic impacts that are less than the proposed project.

Impact 4.14-1: Assuming the 1990 LRDP goal of providing on campus housing for 35 percent of the students would be attained, an additional 2,170 beds of housing would be provided. Thus, the number of student commuters would increase by approximately 3,177 (a total of 11,733 students would commute), the number of faculty and staff commuters would increase by 2,039, and the number of on-campus residents would increase by 2,170 over existing conditions under this alternative. Using current trip generation rates, the increase in trip generation can be estimated, as shown in Table 6-2 below.

Table 6-2 Estimated Net New Vehicle Trips, Alternative 2 (1990 LRDP)

New Increase in Population	*Net New Persons*	*Daily Trip Rate* [a]	
Commuters			
Faculty/Staff	2,039	7.277	14,838
Students	3,177	1.108	3,520
Residents [b]			
Family	1,159	9.153	10,608
Residence Halls	667	2.153	1,436
On-Campus Apts.	344	4.004	1,377
Total New Trips			***31,779***

Source: EIP Associates, 2003

[a] Current trip rates

[b] Proportion of housing per supply breakdown proposed in 1990 LRDP

As shown in Table 6-2, with continued implementation of the 1990 LRDP, an increase in the campus population of approximately 7,386 persons would result in an increase in campus-related trip generation of approximately 31,779 daily vehicle trips. Although this increase would be less than the increase under the 2005 LRDP (of approximately 53,582 daily trips, including a reduction from future expansion of TDM programs), 31,779 daily vehicle trips would result in significant traffic impacts at many intersections near the campus, which could occur at some intersections at which no mitigation within the jurisdiction of The Regents has been identified. Thus, impacts would be *significant and unavoidable*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-2: Continued implementation of the 1990 LRDP would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. In general, the daily maximum amount of construction that could occur under the 1990 LRDP would be the same as the 2005 LRDP. However, because the 2005 LRDP would result in more academic and support facilities on the UCR campus than the 1990 LRDP, the duration of construction would be greater. As indicated in the project-specific analysis, construction-related vehicle trips could occasionally degrade traffic conditions at individual intersections. Therefore, even with the implementation of the identified Mitigation Measures, impacts associated with construction-related vehicle trips under this alternative would remain *significant and unavoidable*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.14-3: Continued implementation of the 1990 LRDP would result in additional vehicular traffic volumes, which may exceed established service levels on roadways designated by the Riverside County Congestion Management Program. As discussed above, continued implementation of the 1990 LRDP would result in an increase in campus-related trip generation of approximately 31,779 daily vehicle trips. Although this increase would be less than the increase under the 2005 LRDP (of approximately 53,582 daily trips, including a reduction from expansion of TDM programs), this increase would degrade traffic conditions on segments of the I-215/SR-60 freeway near the campus, and impacts would be *significant and unavoidable*, despite planned and programmed improvements to freeway capacity. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-4: Continued implementation of the 1990 LRDP would not result in hazards due to design features or land use incompatibilities. As is true for the 2005 LRDP, it is anticipated that any new roadway segments under this alternative 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. Thus, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-5: Continued implementation of the 1990 LRDP could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. Construction activities could result in

temporary closure of traffic lanes or roadway segments to permit the delivery of construction materials or to provide adequate site access. With continued implementation of existing campus Programs and Practices, this impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-6: Continued implementation of the 1990 LRDP would not substantially increase pedestrian hazards due to closure of sidewalks or paths. As is true with the 2005 LRDP, continued implementation of existing campus Programs and Practices would reduce this impact to a *less-than-significant* level. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-7: Continued implementation of the 1990 LRDP would not impair emergency access in the long-term. Although implementation of the 1990 LRDP would generate additional vehicle trips compared to existing conditions, it is anticipated that emergency vehicles will be able to traverse the roadways and intersections that may potentially be impeded from the increase in traffic volume. As is true for the proposed project, emergency vehicles are also anticipated to traverse roadways in other major jurisdictions where traffic conditions are severely congested by generally requiring vehicles to move over in order for the emergency vehicles to pass through. On some limited occasions, because of extended congestion, emergency vehicles may be required to cross to opposing traffic lanes (e.g., to travel westbound in eastbound traffic lanes), use the median, or a bicycle lane, to get around congested road segments or intersections. Thus, development under the 1990 LRDP would not restrict access to the campus for emergency vehicles and services, nor result in substantial traffic increases that would impede delay access to the campus. Thus, impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-8: Continued implementation of the 1990 LRDP would result in development of approximately 4.8 million gsf of new academic and support facilities on the UCR campus. This Continued implementation of the 1990 LRDP would result in construction activities that could impair emergency access to the campus during the short-term. Construction activities could potentially affect emergency response due to temporary construction barricades or other obstructions that could impede emergency access on campus. Continued However, as is true for the proposed project, continued implementation of existing campus Programs and Practices would ensure that construction activities would not impede emergency access. remains unimpeded and this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-9: Continued implementation of the 1990 LRDP would result in inadequate parking capacity. The 1990 LRDP proposed a total on-campus parking inventory of 9,446 spaces, approximately 614 spaces above the existing campus parking inventory. With a projected increase in the campus population of approximately 7,386 persons (with continued implementation of the 1990 LRDP including students, staff, and faculty) under this alternative, an increase of only 614 spaces would not be adequate to serve the projected campus population. Even with implementation of the existing campus Programs

and Practices applicable mitigation measures, in the absence of campus programs to substantially expand parking inventory, this impact would be *significant and unavoidable*. This impact would be greater than the proposed project.

Impact 4.14-10: Continued implementation of the 1990 LRDP would increase student demand for parking in areas adjacent to the campus under this alternative. With a projected increase in campus population of approximately 7,386 persons and a projected increase of only 614 on-campus spaces (per the 1990 LRDP), the demand for off-campus parking would increase substantially. With implementation of the identified Mitigation Measures to provide on-campus parking in relation to demand and to monitor off-campus parking supply and implement enforcement and other measures as warranted, this impact to residents and commercial establishments in regards to parking would not be significant. However, the impact associated with the increase in demand for off-campus student parking would not be reduced. Without implementation of the applicable 2005 LRDP Planning Strategies, this impact would be *significant and unavoidable*. This impact would be greater than the proposed project.

Impact 4.14-11: Continued implementation of the 1990 LRDP could result in temporary elimination of on-campus parking spaces and could require additional temporary parking for construction workers. In general, the daily maximum amount of construction that could occur under the 1990 LRDP would be the same as the 2005 LRDP. However, because the 2005 LRDP would result in approximately 1.67 million gsf of additional academic and support facilities on the UCR campus than the 1990 LRDP, the duration of construction would be greater. Under this alternative, Construction of new structures on-campus could result in the elimination of parking spaces in existing parking lots to provide a sites for the new buildings, to provide access to the a construction site, or space for the staging of construction materials. In addition, construction employees would contribute to parking demand. With implementation of the identified Mitigation Measures, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-12: Continued implementation of the 1990 LRDP would not conflict with applicable policies, plans, or programs supporting alternative transportation. Under the 1990 LRDP, additional student housing would be provided and the transportation demand management (or alternative transportation) program would continue, which would be consistent with applicable plans and policies supporting alternative transportation, and impacts would be *less than significant*. As similar programs would occur under the proposed project, this impact would be comparable to the proposed project.

Impact 4.14-13: Continued implementation of the 1990 LRDP would increase demand for public transit. However, the campus would continue to implement the existing campus Program and Practice of requiring the University to continue to implement a Transportation Demand Management program that meets or exceeds all trip reduction and AVR requirements of the SCAQMD. Implementation of this measure would encourage transit use, and could increase demand for public transit. In addition, with implementation of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level. As the increase in campus population would be less than the proposed project, impacts would be less than the proposed project.

Utilities

Under continued implementation of the 1990 LRDP, or Alternative 2, less development and lower enrollment levels would occur, which could result in the development of fewer buildings, and a reduced density of future development. The location of future development would be guided by the existing 1990 LRDP. As a result, utility and service system impacts would generally be less than the proposed project.

Impact 4.15-1: Continued implementation of the 1990 LRDP would not require the construction of new or expanded water treatment facilities. With future development of 4.8 million gsf and enrollment of 18,050 students, demand for water and water treatment would be less than the proposed project. As adequate supplies would be available for the proposed project, adequate supplies would be available for this alternative, which would result in fewer demands on the water supply. With continued implementation of existing applicable Programs and Practices, impacts would be *less than significant,* and would be less than the proposed project.

Impact 4.15-2: Continued implementation of the 1990 LRDP 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. With future development of 4.8 million gsf and enrollment of 18,050 students, demand for water would be less than the proposed project. As adequate supplies would be available for the proposed project, adequate supplies would be available for this alternative, which would result in fewer demands on the water supply. With continued implementation of existing Programs and Practices, impacts would be *less than significant,* and would be less than the proposed project.

Impact 4.15-3: Continued implementation of the 1990 LRDP would generate solid waste that would not require the expansion of the permitted capacity of a regional landfill. With future development of 4.8 million gsf and enrollment of 18,050 students, solid waste generation would be less than the proposed project, and would be *less than significant*.

Impact 4.15-4: Continued implementation of the 1990 LRDP would comply with all applicable federal, State, and local statutes and regulations related to solid waste, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-5: Continued implementation of the 1990 LRDP would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. With future development of 4.8 million gsf and enrollment of 18,050 students, wastewater discharge would be less than the proposed project, and wastewater treatment requirements would not be exceeded. With continued implementation of existing Programs and Practices, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.15-6: Continued implementation of the 1990 LRDP could require the construction of new or expanded wastewater conveyance and treatment systems. As noted in the project-specific analysis, increased discharge of wastewater could exceed the capacity of near-campus sewer trunk lines, and this

situation would exist with continued implementation of the 1990 LRDP. With implementation of applicable Mitigation Measures, this impact would be reduced to a *less-than-significant* level. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.15-7: Continued implementation of the 1990 LRDP would not increase wastewater generation such that treatment facilities would be inadequate to serve the project and the provider's existing commitments. With future development of 4.8 million gsf and enrollment of 18,050 students, wastewater discharge would be less than the proposed project, and wastewater treatment capacity would not be exceeded and this impact would be *less than significant*.

Impact 4.15-8: Continued implementation of the 1990 LRDP could increase the demand for electricity, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. With future development of 4.8 million gsf and enrollment of 18,050 students, electrical demand would be less than the proposed project, and would be *less than significant*.

Impact 4.15-9: Continued implementation of the 1990 LRDP could increase the demand for natural gas, but would not require or result in the construction of new gas production or transmission facilities. With future development of 4.8 million gsf and enrollment of 18,050 students, natural gas demand would be less than the proposed project, and would be *less than significant*.

Impact 4.15-10: Continued implementation of the 1990 LRDP would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. Adherence to the energy conservation measures identified in the 1990 LRDP Final EIR and Title 24 of the California Code of Regulations would continue under the 1990 LRDP, and this impact would be *less than significant*, comparable to the proposed project.

Relationship to Project Objectives

Alternative 2 would not allow for full development envisioned under the project and it would not meet the 2005 LRDP objectives of developing 7.1 million gsf of new development and accommodating up to 25,000 students at UCR. The campus would not be able to further its academic, research, and public service mission because it does not allow for the State-recommended enrollment growth or provide campus facilities to accommodate academic and research needs. While the State has mandated that the UC accommodate enrollment growth resulting from a projected increase in the number of high school graduates over the next decade, UCR would not absorb its share of that growth (a total of 25,000 students) as recommended by the UC. By limiting the campus population to the existing levels, including the student population, the University would not achieve the 2005 LRDP objective that seeks to ensure student access in a manner consistent with the Master Plan for Higher Education in California, while continuing to enhance the quality of the academic program and meeting the University enrollment growth target of 25,000 students at UCR by 2015/16.

The housing objectives of the 2003 UCR Strategic Plan for Housing would not be met with respect to the percentage of students housed in on-campus or campus-controlled housing. The 2005 LRDP

objective of pursuing a housing goal of 50 percent of student enrollment in campus-controlled housing would not be realized.

6.3.3 Alternative 3: New Development Concentrated on West Campus

The proposed LRDP would result in the development of approximately 7.1 million gsf of space, generally split between the East and West Campus. Under this alternative, future development under the LRDP would be concentrated on the West Campus, with approximately 6.4 million gsf (or 90 percent of LRDP development) developed on the West Campus, and the remaining 0.7 million gsf (10 percent of LRDP development) on the East Campus. This alternative assumes the same enrollment level of 25,000 students and development allocation of 7.1 million new gsf as the 2005 LRDP, under a different configuration for the purpose of reducing impacts associated with development on the East Campus. Because of the extent of development on the West Campus, under this alternative, it is assumed that the "Campus Reserve" of approximately 37 acres at the corner of Martin Luther King Boulevard and Chicago Avenue would be developed, so that the density of buildings on the West Campus could be more comparable to the East Campus.

Comparison of Environmental Effects

Aesthetics

Under Alternative 3, student enrollment would reach 25,000 students and approximately 7.1 million gsf of future development would occur, the same as the proposed project, although development would be concentrated on the West Campus, with only minimal infill development on the East Campus. Because of the extent of development on the West Campus, it is assumed the approximately 37 acre "Campus Reserve" at the corner of Martin Luther King Boulevard and Chicago Avenue would be developed, to reduce overall building density.

Impact 4.1-1: Under this alternative, the Carillon Mall would continue to be designated as open space and the Lower Intramural Field would continue to be utilized as recreational space and therefore, it is assumed that no development would occur at either of these locations, where scenic views of the adjacent Box Springs Mountains are available. As no future development would occur at those locations, no substantial adverse effects on scenic vistas would occur. As the majority of development would occur on the West Campus, this is the area where scenic vistas could be interrupted. However, the West Campus is currently comprised primarily of agricultural land that is not accessible to the general public to allow scenic vistas of surrounding areas. This alternative would result in the development of public gathering spaces on the West Campus that could include long-range views of surrounding areas. With implementation of relevant LRDP Planning Strategies, this impact would be *less than significant*, and less than the proposed project.

Impact 4.1-2: With development of approximately 6.4 million gsf of academic and support facilities on the West Campus and only 0.7 million gsf on the East Campus, future development could substantially

degrade the visual character or quality of the West Campus and the immediate surrounding area, but would result in only minor changes in the visual character of the East Campus, preserving existing edge conditions in the northeastern portion of the campus. Assuming implementation of the 2005 LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, impacts would be *less than significant*. With development concentrated on the West Campus, impacts would be greater on the West Campus, and impacts would be less on the East Campus. Overall, impacts would be comparable to the proposed project.

Impact 4.1-3: With development of approximately 6.4 million gsf of academic and support facilities on the West Campus and only 0.7 million gsf on the East Campus, future development could create new sources of substantial light or glare on the West Campus and vicinity that would adversely affect day or nighttime views from adjacent land uses, while infill development on the East Campus would only result in minimal impacts. Assuming implementation of the identified mitigation measures, this impact would be *less than significant*. With development concentrated on the West Campus, impacts would be greater on the West Campus, while impacts would be minimal on the East Campus. As the same amount of total development would occur, overall impacts would be comparable to the proposed project.

Agricultural Resources

Under Alternative 3, enrollment levels would be the same as under the proposed project, and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus.

Impact 4.2-1: Concentration of development on the West Campus would result in the conversion of approximately 162.3 acres of Prime Farmland to nonagricultural uses (including the approximately 37-acre campus reserve), greater than the 125 acres that would be removed under the proposed project. No feasible mitigation has been identified to reduce this impact; even with implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *significant and unavoidable*. This impact would be greater than the proposed project.

Impact 4.2-2: Concentration of development on the West Campus would not conflict with existing zoning for agricultural use, or a Williamson Act contract, as none of the areas that would be developed include zoning for agricultural uses, or are in Williamson Act contract. No impact would result, comparable to the proposed project.

Impact 4.2-3: Concentration of development on the West Campus would not involve other changes that could convert farmland to nonagricultural use. Assuming implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Air Quality

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. Air quality impacts

are primarily caused by total persons and development, rather than location. However, the resulting lower density development that would result under this alternative would result in additional vehicular trips internal to the campus. For some thresholds, impacts would be greater than the proposed project, and for other thresholds, impacts would be largely similar to the proposed project.

Impact 4.3-1: Concentration of development on the West Campus would not conflict with or obstruct implementation of the Air Quality Management Plan for the South Coast Air Basin. Growth to 25,000 students was included in the projections utilized in the formulation of the AQMP and thus continued implementation would not result in an exceedance of the population projections for Riverside County beyond that level already projected. Thus, with continued implementation of existing Programs and Practices, this impact would be *less than significant*. As this alternative would result in similar enrollment to the proposed project, impacts would be similar to the proposed project.

Impact 4.3-2: With concentration of development on the West Campus, construction activities would result in the generation of criteria pollutants, which could contribute substantially to an existing or projected air quality violation. In general, the daily maximum amount of construction that could occur under this alternative would be the same as the 2005 LRDP. As indicated in the project-specific analysis, it is difficult to precisely quantify daily emissions, due to the normal variability in construction activities. Assuming the same amount of peak construction activity on a given day, this alternative would have the potential to exceed thresholds for NOx. Even with implementation of the identified Mitigation Measures, impacts would remain *significant and unavoidable*. As the same amount of development would occur under this alternative, this impact would be, comparable to the proposed project.

Impact 4.3-3: Concentration of development on the West Campus would increase the amount of mobile and stationary emissions generated by the UCR campus. Due to the reduced density of this alternative, additional vehicular trips within the campus could occur, thereby further increasing the number of vehicular trips. Even with implementation of the relevant LRDP Planning Strategies, existing campus Programs and Practices, and identified Mitigation Measures, this impact would be a *significant and unavoidable*. Due to the potential for additional vehicular trips, this impact would be greater than the proposed project.

Impact 4.3-4: If a project would result in a one percent per year reduction in project emissions of CO, VOC, NOx, SOx, and PM10, then it would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard. Under the proposed project, implementation of the TDM program, energy conservation efforts, and use of Best Available Control Technology programs to reduce the emissions that would otherwise be generated by the campus would result in emissions reductions that are substantially more than one percent on an annual basis. As these air quality management programs are mandated by the SCAQMP, they would remain in effect under this alternative. Concentration of development on the West Campus would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in nonattainment under an applicable federal or State

ambient air quality standard. As the same amount of development would occur under this alternative, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.3-5: Concentration of development on the West Campus would not expose sensitive receptors to substantial pollutant concentrations, including CO hotspots. The same amount of traffic would be generated, although trips would be distributed differently, resulting for the potential for CO hotspots at intersections different than the proposed project. However, impacts would not be anticipated to exceed thresholds. As the same amount of development would occur under this alternative, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.3-6: Concentration of development on the West Campus would not expose sensitive receptors on or off campus to substantial pollutant concentrations due to campus-generated toxic air emissions. Results of the chronic and acute noncancer health effects assessment indicate that all of the hazard index values for each organ system would be less than 1.0. As the same amount of development would occur under this alternative, this impact would be *less-than-significant*, comparable to the proposed project.

Impact 4.3-7: Concentration of development on the West Campus would result in the generation of odors as a result of construction activities, cooking, and trash receptacles on campus. Odors associated with construction would be isolated to the immediate vicinity of the site and activity. Odors from cooking would be similar to existing housing and food service uses on the campus. Trash receptacles would have lids and be emptied on a regular basis, before potentially substantial odors have a chance to develop. Therefore, this alternative would not create objectionable odors affecting a substantial number of people. As the same amount of development would occur under this alternative, this impact would be *less than significant*, comparable to the proposed project.

Biological Resources

Under Alternative 3, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus.

Impact 4.4-1: Concentration of development on the West Campus could result in adverse impacts to candidate, sensitive, or special status plant and wildlife species. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level. With development concentrated on the West Campus, where fewer sensitive habitats and plant species are located, impacts would be less than the proposed project.

Impact 4.4-2: Concentration of development on the West Campus could still result in development within the designated critical habitat area for the California gnatcatcher, or could result in the loss or modification of drainage channels that provide riparian habitat, which could result in substantial adverse effects to gnatcatcher or riparian habitat, although the amount of development on the East Campus would be reduced, and these resources are not present to the same extent on the West Campus. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant*

level. Since substantially less development would occur on the East Campus, impacts would be less than the proposed project.

Impact 4.4-3: Concentration of development on the West Campus could result in a substantial adverse effect on federally protected wetlands through direct removal, filling, or hydrological interruption, although the amount of development on the East Campus would be reduced, and these resources are not present to the same extent on the West Campus. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level. Since substantially less development would occur on the East Campus, where wetlands are found within existing on-campus arroyos, impacts would be less than the proposed project.

Impact 4.4-4: Concentration of development on the West Campus could interfere with the movement of native resident or migratory wildlife species or corridors, as development could still occur within the southeastern hills, or within or adjacent to existing arroyos. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level. Since substantially less development would occur within the southeastern hills and/or within or adjacent to existing arroyos on the East Campus, impacts would be less than the proposed project.

Impact 4.4-5: Concentration of development on the West Campus would result in similar types of impacts to biological resources as the proposed project, and as such, would be in substantial conformance with local applicable policies protecting biological resources. With implementation of relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.4-6: Concentration of development on the West Campus would result in similar types of impacts to biological resources as the proposed project, and as such, would be in substantial conformance with local applicable policies protecting biological resources or the provisions of an adopted habitat conservation plan. *No impact* would result, comparable to the proposed project.

Cultural Resources

Under Alternative 3, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. As a result, cultural resource impacts would generally be less than the proposed project.

Impact 4.5-1: Concentration of development on the West Campus could result in the modification of structures that have been designated as eligible or potentially eligible to the NRHP or CRHR. These modifications could adversely affect the historical significance of these structures by altering their character or setting. With the inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level. As fewer historic or potentially historic structures are located on the West Campus, this impact would be less than the proposed project.

Impact 4.5-2: Concentration of development on the West Campus could result in the demolition of historic or potentially historic structures. Even with implementation of relevant 2005 LRDP Planning

Strategies and continued implementation of the identified existing Program and Practice, this impact would remain *significant*. As fewer historic or potentially historic structures are located on the West Campus, the potential for demolition of historic structures would be reduced, and this impact would be less than the proposed project.

Impact 4.5-3: The West Campus has not been surveyed for potential archaeological resources. Construction activities associated with concentration of development on the West Campus could result in damage to or the destruction of previously unknown archaeological resources. With implementation of the relevant 2005 LRDP Planning Strategies and the identified existing Program and Practice, this impact would be *less than significant*. As development would be concentrated on the West Campus, and only minimal infill development would occur on the East Campus, a smaller area of the campus would be subject to disturbance and impacts could be comparable or more significant than the proposed project due to unknown factors.

Impact 4.5-4: Construction activities associated with concentration of development on the West Campus could result in damage to or the destruction of previously unknown paleontological resources. Although the rock and sediment types that underlie the Campus are unlikely to be fossil-bearing, encountering fossils during earth-disturbing construction activities remains a possibility. With the inclusion of the identified Mitigation Measure, this impact would be *less than significant*. As development would be concentrated on the West Campus, and only minimal infill development would occur on the East Campus, a smaller area of the campus would be subject to disturbance and impacts could be comparable or more significant than the proposed project due to unknown factors.

Impact 4.5-5: Construction activities associated with concentration of development on the West Campus could result in the disturbance of human remains. With implementation of relevant 2005 LRDP Planning Strategies and continued implementation of the identified existing Program and Practice, this impact would be *less than significant*. As a smaller area of the campus would be subject to disturbance, this impact could be comparable or more significant than the proposed project due to unknown factors.

Geology and Soils

Under this alternative, enrollment levels would be the same as the proposed project and the same amount of development would occur, and geology and soils impacts would be comparable to the proposed project.

Impact 4.6-1: An equal amount of development would occur under this alternative, although this development would be sited differently on campus. The potential for groundshaking to affect persons and structures would not change, as a seismic event would result in similar impacts on the West Campus as on the East Campus. Impacts would be the same in severity as the proposed project, and with continued implementation of existing Programs and Practices, impacts would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.6-2: The severity of impacts from erosion is related to the extent of ground clearing and excavation activities. Therefore, concentrating development on the West Campus instead of on the East

Campus would not change the potential for impacts from erosion. Impacts would be the same in severity as the proposed project, and with implementation of relevant LRDP Planning Strategies and continued implementation of existing Programs and Practices, impacts would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.6-3: Concentration of development on the West Campus could result in construction in areas underlain by soils of varying stability that could subject people and structures to hazards associated with landsliding, lateral spreading, subsidence, liquefaction, collapse, or differential settlement. Buildings would be constructed consistent with geotechnical recommendations, and with implementation of relevant LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*. As an equivalent amount of development would occur, impacts would be comparable to the proposed project.

Impact 4.6-4: The potential for effects from expansive soils would remain site-specific and buildings would be constructed consistent with geotechnical recommendations. Impacts would be the same in severity as the proposed project, and with continued implementation of existing Programs and Practices, impacts would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Hazards and Hazardous Materials

Under this alternative, enrollment levels would be the same as the proposed project and the same amount of development would occur, and hazards and hazardous materials impacts would be comparable to the proposed project.

Impact 4.7-1: Increases in handling and transport of hazardous materials would occur under this alternative, similar to the proposed project. Increases in handling and transport of hazardous materials would be primarily from the West Campus. The overall routine transport, use, disposal, or storage of materials would continue to be conducted in compliance with existing programs and permit conditions, which would reduce potential impacts. The location on campus where hazardous materials are handled would not affect the potential for risks from these substances. With the inclusion of existing Programs and Practices, impacts would be *less than significant*, and would be comparable to the proposed project.

Impact 4.7-2: Development on the West Campus would decrease renovation and demolition on the campus. There is minimal development on the West Campus in areas where campus development is proposed under this alternative and therefore construction in this area would minimize the amount of renovation and demolition that would occur. However, since some development may exist that would be demolished, the potential for risks from exposure to materials such as lead and asbestos could occur. Compliance with laws, existing programs, and permit conditions would minimize these effects. With continued implementation of existing Programs and Practices, impacts would be less severe than the proposed project, and impacts would be *less than significant*.

Impact 4.7-3: Concentration of development on the West Campus would increase the amount of hazardous materials used on and transported to and from the campus, which could expose people to

potential health risks in the event of an accident or accidental release, similar to the proposed project. With implementation of the existing campus Program and Practice, this impact would be *less than significant*. As a similar amount of development would occur under this alternative, the potential for an accident or accidental release involving hazardous materials would be comparable to the proposed project.

Impact 4.7-4: Concentration of development on the West Campus could create a significant risk of exposure of construction workers and campus occupants to contaminated soil or groundwater. With the inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.7-5: Concentration of development on the West Campus could result in hazardous emissions or require the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. With implementation of the existing campus Program and Practice, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.7-6: Concentration of development on the West Campus would not result in construction on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would not create a significant hazard to the public or the environment. No identified contaminated sites are located in the area where construction would occur. With implementation of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.7-7: Concentration of development on the West Campus could impair implementation of, or physically interfere with, an adopted emergency response or emergency evacuation plan. Effects would occur in a similar manner to those if development were to occur primarily on the East Campus. However, with the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.7-8: Concentration of development on the West Campus could expose people or structures to a risk of loss, injury, or death involving wildland fires. However, less development would be located in proximity to the fire-prone area of the southeast hills. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level. As less development would occur adjacent to the southeastern hills, impacts would be less than the proposed project.

Hydrology and Water Quality

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. Impacts would be comparable to the proposed project.

Impact 4.8-1: Concentration of development on the West Campus would result in an increase of impermeable surface area associated with new buildings and additional pavement, which would result in

additional runoff (e.g., stormwater) that may contain stormwater contaminants that are typical of urbanized areas. The types of uses proposed would be the same as the proposed project. Therefore, the contaminant constituents contained in runoff would be similar to those resulting from the proposed project. Development of this alternative would similarly have the potential to effect water quality standards. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Program and Practice, impacts would be similar to the proposed project, and impacts would be *less than significant*.

Impact 4.8-2: Concentration of development on the West Campus would not substantially deplete groundwater supplies or interfere with groundwater recharge. Since the campus is not identified as a significant groundwater recharge area, the relocation of development to the West Campus would not affect groundwater recharge. With implementation of the relevant LRDP Planning Strategies and continued implementation of the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.8-3: Implementation of this alternative would alter drainage patterns and expose soils to erosion during construction. These changes to drainage patterns could increase erosion or siltation. Approximately the same amount of area would be disturbed, although this alternative would result primarily in construction on vacant land, whereas the proposed project would include infill development. The potential for changes to drainage patters and erosion and sedimentation would thus be greater from disturbance on currently vacant land. Implementation of relevant 2005 LRDP Planning Strategies and continued implementation of existing Programs and Practices identified for the proposed project would minimize impacts. Although a larger area of the West Campus would be subject to development, less development would occur on the East Campus, and impacts would be comparable to the proposed project. Impacts would be *less than significant*.

Impact 4.8-4: Concentration of development on the West Campus would not substantially alter site drainage patterns or substantially increase the rate or amount of surface runoff and would not result in flooding either on or off site. With continued implementation of the existing Programs and Practices, this impact would be reduced to a *less-than-significant* level. Although a larger area of the West Campus would be subject to development, less development would occur on the East Campus, and impacts would be comparable to the proposed project.

Impact 4.8-5: Concentration of development on the West Campus would not create runoff that would exceed the capacity of existing storm drain systems or provide substantial sources of polluted runoff. With implementation of existing Programs and Practices, this impact would be *less than significant*. Although a larger area of the West Campus would be subject to development, less development would occur on the East Campus, and impacts would be comparable to the proposed project.

Impact 4.8-6: Concentration of development on the West Campus could require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems. However, with the incorporation of existing campus Programs and Practices and mitigation measures discussed in other resource sections for the 2005 LRDP and due to the relatively small amount of physical improvements that would need to be constructed or small areas that could be disturbed, the construction

of these facilities would not individually result in significant environmental impacts. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.8-7: Concentration of development on the West Campus would not otherwise substantially degrade water quality. With continued adherence NPDES permit conditions and other water quality control measures, these impacts would be *less than significant*, comparable to the proposed project.

Impact 4.8-8: Concentration of development on the West Campus would not place housing within a 100-year flood hazard area. *No impact* would result, and impacts would be comparable to the proposed project.

Impact 4.8-9: Concentration of development on the West Campus would not place structures within a 100-year flood hazard area. The campus plans to reduce the extent of the 100-year floodplain on the East Campus, which would reduce the potential for structures to be affected by a flood of this magnitude. If these improvements are not completed, then Mitigation Measures would be required to address impacts. Impacts would be less than significant and would be similar to the proposed project.

Impact 4.8-10: Concentration of development on the West Campus would alter site drainage patterns but would not expose people or structures to significant risk of loss, injury, or death involving flooding. Risks would be similar to those with development concentrated on the East Campus. With implementation of the existing Program and Practice identified, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.8-11: Concentration of development on the West Campus would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow, as risks would be similar to those that would occur with development concentrated on the East Campus. With implementation of relevant 2005 LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Land Use and Planning

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. Generally, impacts would be comparable to the proposed project.

Impact 4.9-1: Implementation of the 2005 LRDP would result in changes in on-campus land use that could be substantially incompatible with existing adjacent land uses. With implementation of the relevant 2005 LRDP Planning Strategies and the existing Programs and Practices identified below, this impact would be less than significant. As many of the LRDP Planning Strategies are more relevant to the East Campus, although impacts would be *less than significant*, the potential for land use incompatibilities as a result of increased development on the West Campus would be greater than for the proposed project.

Impact 4.9-2: Concentration of development on the West Campus would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. With implementation of the relevant 2005 LRDP Planning Strategies and the existing Programs and Practices identified below, this impact would be *less than significant*, comparable to the proposed project

Impact 4.9-3: Concentration of development on the West Campus would not conflict with any applicable habitat conservation plan or natural community conservation plan. *No impact* would result, comparable to the proposed project.

Noise

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus.

Impact 4.10-1: Concentration of development on the West Campus would not expose new on-campus student residential uses to noise levels in excess of the State's 45 dBA CNEL interior noise standard. Implementation of existing Programs and Practices and adherence to the applicable noise requirements would result in project design features in on-campus housing to reduce interior noise levels, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.10-2: Concentration of development on the West Campus could result in construction activities that generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. Less development would occur in proximity to occupied on-campus buildings. However, some construction would occur adjacent to existing on-campus structures, including on-campus housing, which would expose persons to groundborne noise and vibration (e.g., vibration levels could reach up to 87 VdB at buildings within 25 feet of construction). Even with the inclusion of identified Mitigation Measures, this impact would be *significant and unavoidable.* Because less development would occur on the East Campus, impacts would be less than the proposed project.

Impact 4.10-3: With concentration of development on the West Campus, construction would not generate and expose persons off campus to excessive groundborne vibration or groundborne noise levels that would exceed the Federal Railway Administration's 80 VdB vibration impact threshold for residences off campus. With implementation of the LRDP Planning Strategies, including setbacks along the campus perimeter, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.10-4: Concentration of development on the West Campus would not generate and expose persons on or off campus to excessive operational groundborne vibration or groundborne noise levels. The background operational vibration levels would be similar to the proposed project and would be expected to average around 50 VdB, which is substantially less than the 65 VdB threshold for sensitive on-campus research buildings, 80 VdB at residences and student housing buildings, and 83 VdB at other institutional buildings. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.10-5: Concentration of development on the West Campus would generate increased local traffic volumes consistent with the proposed project, but would not cause a substantial permanent increase in ambient noise levels at on- or off-campus locations. With implementation of the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.10-6: Concentration of development on the West Campus could add new stationary sources of noise consistent with the proposed project, but would not cause a substantial permanent on- or off-campus increase in ambient noise levels. Stationary noise sources would be similar to the proposed project, such as HVAC equipment, which would generate levels of less than 51 dBA Leq with shielding. As existing campus noise levels average 54 to 69 dBA Leq, the additional sources of stationary noise would not result in a substantial permanent increase in ambient noise levels of 5 dBA CNEL or more. With implementation of the relevant 2005 LRDP Planning Strategy and continued implementation of the existing Programs and Practice, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.10-7: With concentration of development on the West Campus, construction could result in temporary or periodic increases in ambient noise levels at on-campus locations. Depending on the location and type of development, construction noise levels could temporarily reach up to 83 dBA L_{eq} during the daytime at nearby on-campus buildings, which could be an increase of more than 10.0 dBA Leq over the existing daytime noise levels at these buildings. As such, construction noise levels could substantially increase existing noise levels at on-campus classrooms, office, and residential uses. Since most development would be concentrated on the West Campus and away from existing occupied buildings, the impact would not occur as frequently. However, even with the inclusion of existing Programs and Practices, this impact would be *significant and unavoidable*, but would be less than the proposed project.

Impact 4.10-8: With concentration of development on the West Campus, construction could result in substantial temporary or periodic increases in ambient noise levels at off campus locations. Construction noise would periodically increase noise levels by more than 10 dBA at selected off-campus locations, depending on the location and type of construction. Even with the inclusion of existing Practice and Programs, this impact would be *significant and unavoidable*, comparable to the proposed project.

Impact 4.10-9: Concentration of development on the West Campus could not result in temporary or periodic increases in ambient noise levels due to special events. Although the increase in number of students living at the campus would increase the number of events, these events would not result in substantial temporary or periodic increases in ambient noise levels even though they could occur on more days per year. This impact would be *less than significant*, comparable to the proposed project.

Population and Housing

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur. Thus, all impacts would be comparable to the proposed project.

Impact 4.11-1: Concentration of development on the West Campus would directly induce substantial population growth in the area by proposing increased enrollment and additional employment consistent with the proposed project, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.11-2: Concentration of development on the West Campus would result in an increased demand for housing consistent with the proposed project. However with the provision of on-campus housing as directed with the inclusion of the identified 2005 LRDP Planning Strategy, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.11-3: Concentration of development on the West Campus would remove the proposed demolition of family housing on the East Campus. The proposed project identified replacement of housing on campus such that no net loss of housing or displacement of residents would result. Therefore, the net effect of either the project or this alternative would be the same. With implementation of the relevant 2005 LRDP Planning Strategy, impacts would be similar in severity to the proposed project, and impacts would be *less than significant*.

Impact 4.11-4: Concentration of development on the West Campus would remove the proposed demolition of family housing on the East Campus. The proposed project identified replacement of housing on campus such that no net loss of housing or displacement of residents would result. Therefore, the net effect of either the project or this alternative would be the same. Impacts would be similar in severity to the proposed project, and impacts would be *less than significant*.

Public Services

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur, although in a different location. Because public services impacts are largely based upon population, and the campus population would be the same under this alternative, impacts to public services would be comparable to the proposed project.

Impact 4.12-1: Concentration of development on the West Campus would not result in significant environmental effects associated with the provision of new or physically altered fire protection facilities to maintain acceptable response times and fire flows. Relocation of development to the West Campus would not affect the ability of fire protection services to serve the site. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.12-2: Concentration of development on the West Campus would not result in significant environmental impacts associated with the provision of new or altered police protection facilities to maintain applicable service levels. Relocation of development to the West Campus would not affect the ability of police protection services to serve the site. With implementation of relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.12-3: Concentration of development on the West Campus would increase the number of school-age children in local school districts, including the Riverside Unified School District, that would be below the planned increase in District capacity, consistent with the proposed project. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.12-4: Concentration of development on the West Campus would not result in significant environmental impacts associated with the provision of new or altered library facilities to meet demand for library services. This impact would be *less than significant*, comparable to the proposed project.

Recreation

Under this alternative, enrollment levels would be the same at the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. This alternative would result in development of recreational facilities to the same extent as the proposed project, although in a different location in campus. Future recreational demands would be met through these new facilities in combination with existing facilities. As an equivalent level of development would occur, impacts to recreational facilities would be comparable to the proposed project.

Impact 4.13-1: Concentration of development on the West Campus would increase the campus population and result in additional demand for recreational space. Additional recreational space would be provided under this alternative, although it would be provided primarily on the West Campus. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.13-2: Concentration of development on the West Campus would include recreational facilities that may have an adverse physical effect on the environment (related to construction emissions). New recreational areas, including playing fields, would be developed, similar to the proposed project. Thus this impact would be *less than significant*, comparable to the proposed project

Impact 4.13-3: Concentration of development on the West Campus is unlikely to result in the conversion of existing recreational fields on the East Campus to non-recreational uses, based on proposed land use plans. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, and less than the proposed project.

Transportation/Traffic

Under this alternative, enrollment levels would be the same as the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. The same number of total trips would result, and impacts would be similar to the proposed project, although they could occur at different locations with a different distribution. The total effect, however, would be comparable to the proposed project.

Impact 4.14-1: Concentration of development on the West Campus would result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service. With the same ultimate enrollment level as the proposed project of 25,000 students, the additional vehicular trips generated under this alternative would adversely impact intersections to the same degree as the proposed project. As is true for the proposed project, all off-campus intersection improvements would be within the jurisdiction of the City of Riverside, not the University, to implement. As such, this impact would be *significant and unavoidable*. Although more development would occur on the West Campus and less development would occur on the East Campus, the campus population and parking inventory would be the same as the proposed project, therefore trip generation would be equivalent. Impacts to local streets would be similar to the proposed project, although intersections on the West Campus, such as Canyon Crest/Central, Chicago Ave/Le Conte Dr, Canyon Crest/Martin Luther King Blvd, Chicago Ave/Martin Luther King Blvd, Chicago Ave/University Ave, Iowa Ave/University Ave, and Chicago Ave/3rd Street would be more heavily impacted than under the proposed project, and impacted intersections on the East Campus would experience fewer impacts. It is possible that additional intersections beyond those identified for the proposed project could be also be affected due to changes in traffic distribution patterns. However, since the total trip generation would be the same, when taken as a whole, impacts to local streets would be comparable to the proposed project.

Impact 4.14-2: Concentration of development on the West Campus would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. As is true for the proposed project, even with continued implementation of the applicable campus Program and Practice that would require coordination of construction activities to avoid overlap of activities with heavy truck traffic, construction vehicle traffic under this alternative may still result in localized impacts because of the imprecise nature of construction schedules, and the need to accommodate the anticipated enrollment increases and program growth identified in the 2005 LRDP. Thus, this impact would be *significant and unavoidable*. Although more development would occur on the West Campus and less development would occur on the East Campus, impacts would be comparable to the proposed project.

Impact 4.14-3: Concentration of development on the West Campus would result in additional vehicular traffic volumes, which may exceed established service levels on roadways designated by the Riverside County Congestion Management Program. With the same ultimate enrollment level as the proposed project of 25,000 students, the additional vehicular trips generated under this alternative would adversely impact roadways designated by the Riverside County Congestion Management Program to the same degree as the proposed project. As such, all the freeway segments that would operate unacceptably under the proposed project, including both 2015 background traffic and background traffic with project conditions, would also operate unacceptably under this alternative. Even with implementation of relevant LRDP Planning Strategies and applicable Mitigation Measures, this impact would be *significant and unavoidable*. Although more development would occur on the West Campus and less development would occur on the East Campus, impacts would be comparable to the proposed project.

Impact 4.14-4: Concentration of development on the West Campus would not result in hazards due to design features or land use incompatibilities. With implementation of LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-5: With concentration of development on the West Campus, construction could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. Construction activities could result in temporary closure of traffic lanes or roadway segments to permit the delivery of construction materials or to provide adequate site access. With continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-6: With concentration of development on the West Campus, construction would not substantially increase pedestrian hazards due to closure of sidewalks or paths. With implementation of the existing Program and Practice, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-7: Concentration of development on the West Campus would not impair emergency access in the long-term, as the amount of new development would be the same as the proposed project. Although implementation of this alternative would generate additional vehicle trips compared to existing conditions, it is anticipated that emergency vehicles will be able to traverse the roadways and intersections that may potentially be impeded from the increase in traffic volume. As is true for the proposed project, emergency vehicles are also anticipated to traverse roadways in other major jurisdictions where traffic conditions are severely congested by generally requiring vehicles to move over in order for the emergency vehicles to pass through. On some limited occasions, because of extended congestion, emergency vehicles may be required to cross to opposing traffic lanes (e.g., to travel westbound in eastbound traffic lanes), use the median, or a bicycle lane, to get around congested road segments or intersections. Thus, development under this alternative would not restrict access to the campus for emergency vehicles and services, nor result in substantial traffic increases that would delay access to the campus. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-8: With concentration of development on the West Campus, construction could impair emergency access during the short-term. Construction activities could potentially affect emergency response due to temporary construction barricades or other obstructions that could impede emergency access on campus. With implementation of the existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-9: Concentration of development on the West Campus would not result in inadequate parking capacity, as the parking inventory would be the same as the proposed project, although it could be sited differently. With implementation of the relevant 2005 LRDP Planning Strategies and existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-10: Concentration of development on the West Campus would increase demand for parking in areas adjacent to the campus, since the ultimate level of enrollment under this alternative would be the same as the proposed project. With implementation of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.14-11: With concentration of development on the West Campus, construction of new facilities could result in temporary elimination of on-campus parking spaces and could require additional temporary parking for construction workers. In general, the daily maximum amount of construction that could occur under this alternative would be the same as the 2005 LRDP. Elimination of parking spaces in existing parking lots could occur to provide sites for the new buildings, to provide access to a construction site, or space for the staging of construction materials. With inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.14-12: Concentration of development on the West Campus would not conflict with applicable policies, plans, or programs supporting alternative transportation. However, less dense development on campus would result in increased vehicular trips within the campus, reducing the effectiveness of TDM programs. Nevertheless, with inclusion of the identified Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, although impacts would be greater than the proposed project.

Impact 4.14-13: Concentration of development on the West Campus would increase demand for public transit, as the ultimate level of enrollment under this alternative would be the same as the proposed project. Less dense development could create more demands for vehicular transportation, however. With inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Utilities

Under this alternative, enrollment levels would be the same as the proposed project and the same amount of development would occur; however, approximately 90 percent of future development would occur on the West Campus, with only minor infill development on the East Campus. Impacts to Utilities would be comparable to the proposed project.

Impact 4.15-1: Concentration of development on the West Campus would not require the construction of new or expanded water treatment facilities, as placement of development on the West Campus would not change total water demands. However, there would be a need for construction of additional infrastructure with location of more development on the West Campus, which is currently largely undeveloped. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*, but would be greater than the proposed project.

Impact 4.15-2: Concentration of development on the West Campus 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. Placement of development on the West Campus would not change total water demands in comparison to the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-3: Concentration of development on the West Campus would generate solid waste that would not require the expansion of the permitted capacity of a regional landfill, as placement of development on the West Campus would not change total solid waste generation. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-4: Concentration of development on the West Campus would comply with all applicable federal, State, and local statutes and regulations related to solid waste. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-5: Concentration of development on the West Campus would not exceed wastewater treatment requirements of the Regional Water Quality Control Board, as placement of development on the West Campus would not change wastewater discharge. With implementation of the relevant 2005 LRDP Planning Strategy and continued implementation of existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-6: Concentration of development on the West Campus would require the construction of new or expanded wastewater conveyance systems. There would be a need for construction of additional infrastructure with location of more development on the West Campus, which is currently largely undeveloped. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level, but would be greater than the proposed project.

Impact 4.15-7: Concentration of development on the West Campus would not increase wastewater generation such that treatment facilities would be inadequate to serve the project and the provider's existing commitments, as placement of development on the West Campus would not change total wastewater generation. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-8: Concentration of development on the West Campus would increase the demand for electricity, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact, as placement of development on the West Campus would not change total energy demands. However, there would be a need for construction of additional infrastructure with location of more development on the West Campus, which is currently largely undeveloped. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, but would be greater than the proposed project.

Impact 4.15-9: Concentration of development on the West Campus would 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 a significant environmental impact, as placement of

development on the West Campus would not change total gas demands. However, there would be a need for construction of additional infrastructure with location of more development on the West Campus, which is currently largely undeveloped. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, but would be greater than the proposed project.

Impact 4.15-10: Concentration of development on the West Campus would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, comparable to the proposed project.

Relationship to Project Objectives

Alternative 3 would allow for full development envisioned under the project, although it would not meet all of the 2005 LRDP objectives. This alternative would allow for development of 7.1 million gsf of new development and would accommodate up to 25,000 students at UCR. The on-campus housing goal of 50 percent would also be met. The campus would still be able to further its academic, research, and public service mission, as it would allow for the State-mandated enrollment growth and provide campus facilities to accommodate academic and research needs. As directed by the UC, the accommodation of 25,000 students by UCR would absorb the enrollment growth resulting from the projected increase in the number of high school graduates over the next decade. As such, the University would achieve the 2005 LRDP objective that seeks to ensure student access in a manner consistent with the Master Plan for Higher Education in California, while continuing to enhance the quality of the academic program and meeting the University enrollment growth target of 25,000 students at UCR by 2015/16. However, spreading the campus out will impact its walkability.

The objective of reserving land at the western edge of the campus for future growth would not be met, since this area would be necessary for development of the full 7.1 million new gsf on campus. In addition, infill development on the East Campus would fully not occur, and the LRDP Planning Strategy of increasing in building densities on campus, particularly in academic zones, in order to preserve open space and conserve limited land resources and the agricultural fields would not occur.

6.3.4 Alternative 4: Off-Site Alternative

This alternative assumes that future University development would be accommodated on an off-campus remote site. The former March Air Force Base (AFB), located approximately six miles southeast of the campus, has been identified as an alternative site (Figure 6-1). March Air Force Base was realigned and became March Air Reserve Base as part of the Base realignment and Closure Act in 1996. The 6,500 acre former Air Force Base was the subject of a General Plan and Master EIR prepared by the March Joint Powers Authority (JPA). In order to proceed with this, or any other off-site alternative, UCR would need to purchase this land. In addition to the difficulties of acquiring additional off-site property, the University is facing unprecedented budget constraints that have led to fee increases, programmatic cutbacks, and proposals to change admission criteria for the University as a whole. In the face of these constraints, it is not feasible for the University not to use existing suitable land that it already owns—

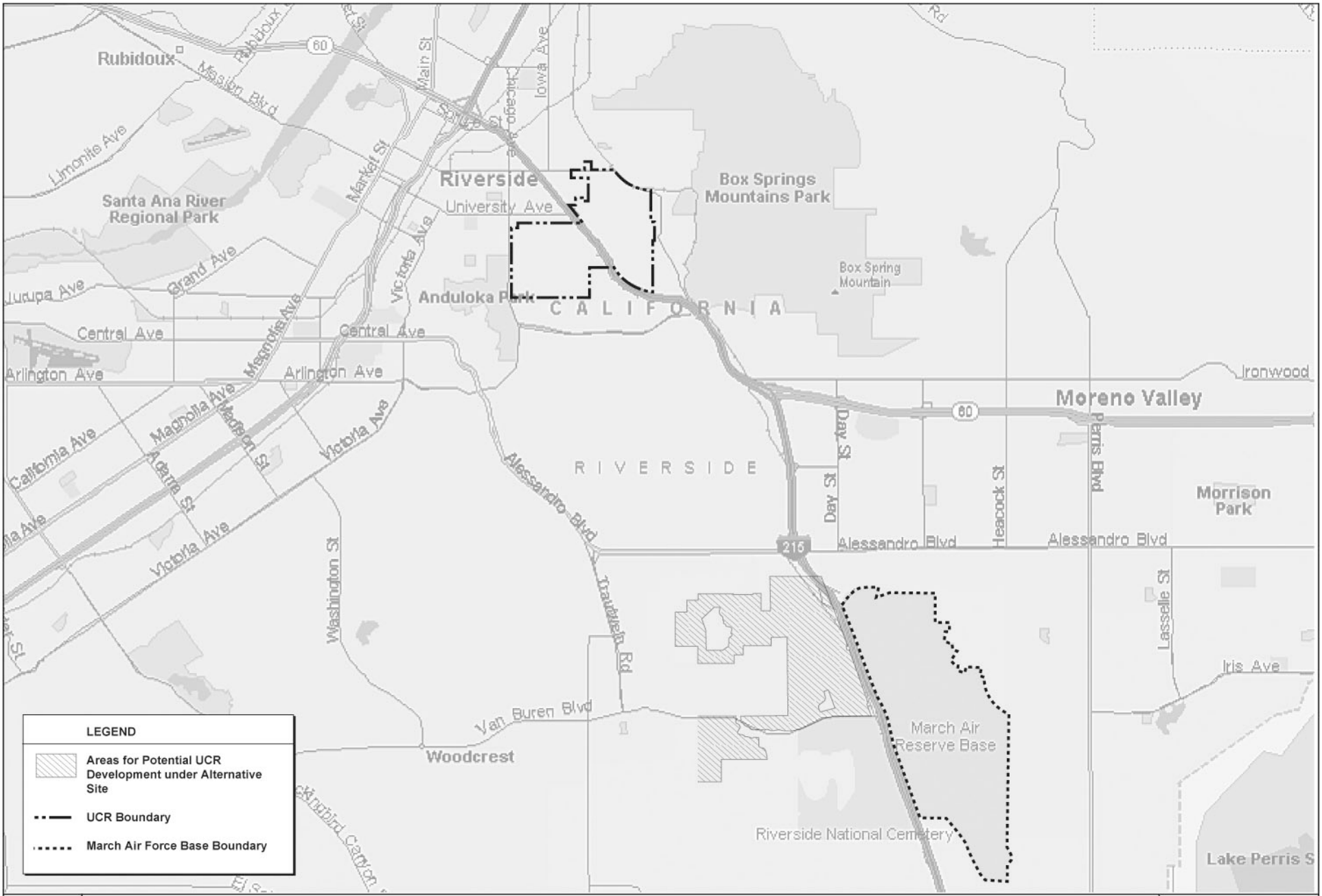

FIGURE **6-1**

Location of March Air Force Base Alternative Site

Not to Scale

10537-00

Source: Microsoft Street & Trips, 2004; EIP Associates, 2004

UC Riverside

EIP ASSOCIATES

such as the West Campus—to meet its program needs. Agricultural resources on the West Campus would not be impacted, where other development impacts (such as traffic impacts, and other local development impacts) would be shifted from one location to another, but would not be avoided.

This alternative assumes the same development allocation of 7.1 million gsf of new development as the 2005 LRDP, at a different project site (consistent with Section 15126.6(f)(2) of the CEQA Guidelines) for the purpose of reducing impacts associated with an increase in on-campus development and number of students. No new development would occur at the existing UCR campus; all new development would occur at the former March AFB. This would include all those academic, research, administrative, support, and residential uses currently proposed. In addition, some duplicative support facilities currently provided at the UCR campus would also need to be developed at an alternative site to ensure its functionability. The total amount of these uses is undetermined at this time, although it would not be substantial in comparison to the total amount of development proposed.

The *March Joint Powers Authority General Plan* identifies uses for the former March AFB. Uses include 9.8 million sf of industrial uses, primarily including business park, but also including industrial uses; 5.1 million sf of commerce uses including office, mixed use, commercial, and destination recreation uses; 2.0 million sf of public uses including park, recreation, open space and public facilities; and 4.7 million sf of special uses, including military operations, aviation, and other miscellaneous uses. The most practicable uses to be replaced would be the industry and commerce uses, as this would allow the alternative site to be developed in one contiguous area at the densities identified in the General Plan. The area that would be developed would include most of the land west of Interstate 215 and north of the Riverside National Cemetery, in areas designated for business park, industrial uses, and mixed use (Figure 6-2).

Unless otherwise noted, the technical information provided in this section of the alternatives analysis was obtained from the *March Joint Powers Authority General Plan Final Master Environmental Impact Report* (General Plan EIR).

Comparison of Environmental Effects

Aesthetics

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

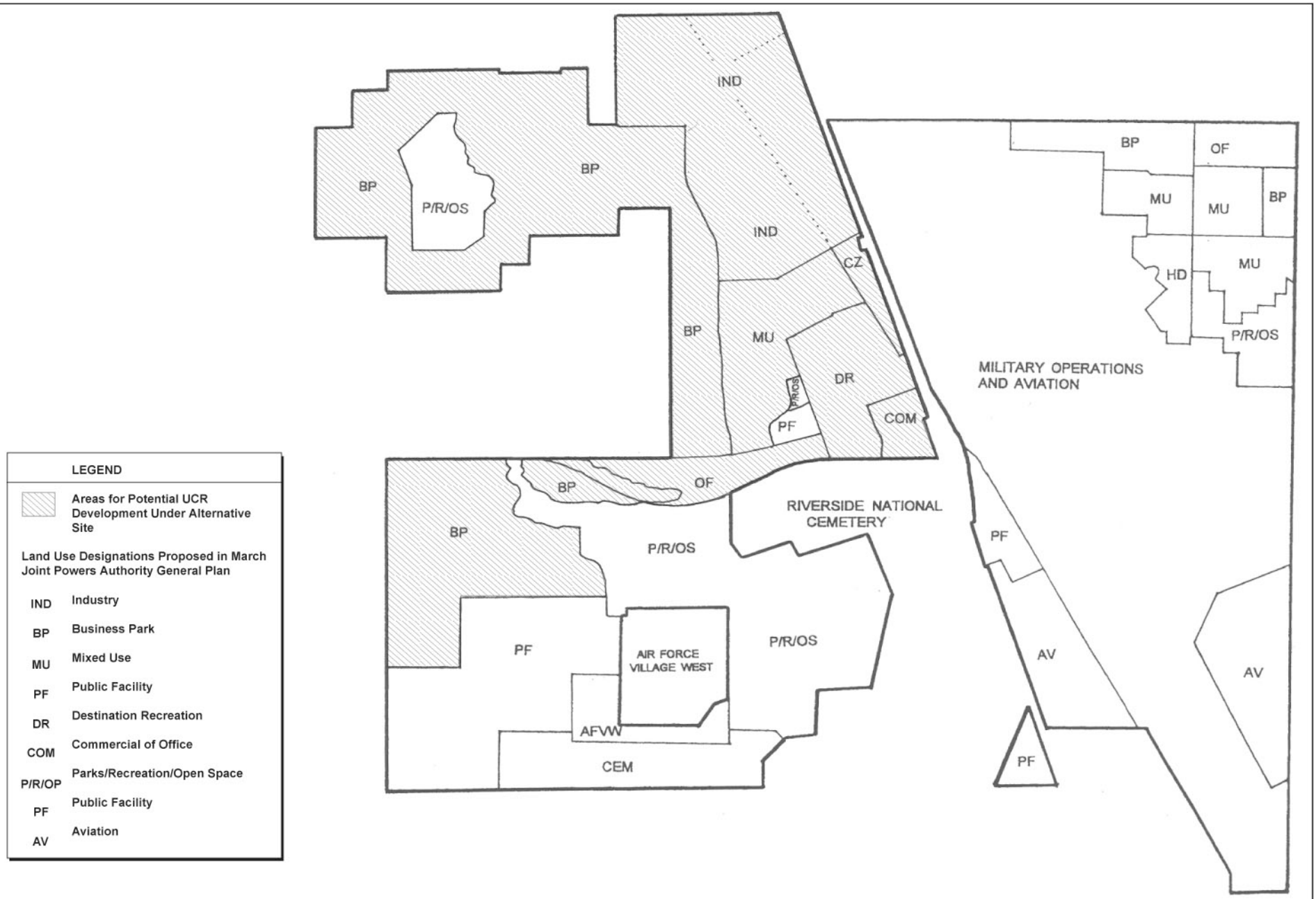

FIGURE **6-2**

March Air Force Base Alternative Site

Not to Scale

10537-00

Source: UC Riverside LRDP, 2005

UC Riverside

EIP ASSOCIATES

Impact 4.1-1: Development would result in an overall change from largely vacant and open areas to administrative, academic and support facilities. The additional development would result in loss of scenic vistas through and of undeveloped portions of the former March AFB that are available from public vantage points such as Interstate 215. Views of the surrounding hillsides would be modified due to development on the base that would obstruct long-range views. The March JPA General Plan (General Plan) recognizes the visual qualities of the area and identifies programs and policies that would retain scenic vistas. Similar policies, as well as relevant 2005 LRDP Planning Strategies, would be applied under this alternative. Although some views would be affected, the overall availability of distant views would remain. The severity of impacts would be similar to the proposed project, and impacts would be *less than significant*.

Impact 4.1-2: The visual character of the base would be modified from large, vacant areas, to a more urban environment characterized by campus uses. Design review, landscaping, height restrictions, site orientation, and setbacks would assist with reducing visual incompatibilities. Adherence to relevant 2005 LRDP Planning Strategies, continued implementation of existing Programs and Practices, and policies similar to those identified in the March JPA General Plan would minimize impacts. The overall severity of impacts would be similar to the proposed project, and impacts would be *less than significant*.

Impact 4.1-3: Development buildings and parking structures would increase nighttime illumination at the alternative site. New structures could use materials such as reflective surfaces that would result in glare. Changes from lighting would be potentially significant, and implementation of mitigation measures for the project would reduce impacts. The overall severity of impacts would be similar to the proposed project, and impacts would be reduced to *less than significant* levels.

Agricultural Resources

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. As no agricultural resources would be affected by development on the former March AFB site, impacts would be less than under the proposed project.

Impact 4.2-1: No land on the former March Air Force Base is identified as Prime Farmland, therefore, *no impact* to Prime Farmland or Farmland of Statewide Importance would result, and impacts would be less than the proposed project.

Impact 4.2-2: No land on the former March Air Force Base is covered by a Williamson Act contract or zoned for agricultural use. Therefore, *no impact* would result, comparable to the proposed project.

Impact 4.2-3: Development of UCR academic and support facilities at the former March AFB site would not involve other changes that could convert Farmland to non-agricultural uses, and impacts would be *less than significant*, comparable to the proposed project.

Air Quality

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.3-1: The Off-Campus Alternative would not conflict with the AQMP. The proposed project is included in the projections utilized in the formulation of the AQMP. The proposed project would not increase population within the County beyond that already projected. This alternative would result in the same amount of development and increase in enrollment as the proposed project. Therefore, this alternative would also be within the projections utilized in the formulation of the AQMP. The LRDP Planning Strategies and existing campus Programs and Practices that would reduce air emissions are consistent with the goals of the AQMP, and these Planning Strategies and Programs and Practices would remain in effect under this alternative. Therefore, this alternative would not conflict with the AQMP. Impacts would be similar to the proposed project, and would be *less than significant*.

Impact 4.3-2: This alternative would result the same amount of total development as the proposed project. As such, the construction activities under this alternative would result in the generation of criteria pollutants, which could contribute substantially to an existing or projected air quality violation. The daily maximum amount of construction that could occur under this alternative would be the same as the 2005 LRDP, only in an off-site location. As indicated in the project-specific analysis, it is difficult to precisely quantify daily emissions, due to the normal variability in construction activities. Assuming the same amount of peak construction activity on a given day, this alternative would have the potential to exceed thresholds for NOx. Even with implementation of existing Programs and Practices and the identified Mitigation Measures, this impact would be *significant and unavoidable*, comparable to the proposed project.

Impact 4.3-3: This alternative would result in an increase in daily emissions associated with stationary sources for space and water heating, landscape maintenance activities, and use of consumer products, in addition to increased vehicular trips and their associated emissions. The proposed project would exceed CO, VOC, and NOx emissions by five or more times the identified threshold. This alternative would result in the same growth potential, only at an off-site location. Additional vehicular trips would also result from commute between the campus and the proposed off-site location. Therefore, this alternative would increase the amount of emissions generated by the campus more so than the proposed project. Even with implementation of the relevant LRDP Planning Strategies, existing campus Programs and Practices, and the identified Mitigation Measure, this alternative would result in operational emissions that exceed the applicable thresholds for CO, VOC, NOx, and PM10. Impacts would be greater than the proposed project, and would be *significant and unavoidable*.

Impact 4.3-4: If the project would result in a one percent per year reduction in project emissions of CO, VOC, NOx, SOx, and PM10, then it would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or State

ambient air quality standard. Under the proposed project, implementation of the TDM program, energy conservation efforts, and use of Best Available Control Technology programs to reduce the emissions that would otherwise be generated by the campus would result in emissions reductions that are substantially more than one percent on an annual basis. These programs would remain in effect under this alternative. Therefore, this alternative would result in impacts similar to the proposed project, and impacts would be *less than significant*.

Impact 4.3-5: Substantial pollutant concentrations could be generated by CO hotspots at intersections, due to traffic congestion. The proposed project would result in CO concentrations well below federal and State 1- and 8-hour standards. This alternative would result in additional traffic in comparison to the proposed project, due to the new commute between the campus and the proposed off-site location. Therefore, this alternative would increase the amount of emissions generated by the campus more so than the proposed project. However, traffic increases would likely not be substantial enough to increase CO concentrations above federal and State standards. Impacts would be greater than the proposed project, but would remain *less than significant*.

Impact 4.3-6: Toxic air emissions could be generated by teaching and research laboratories, greenhouses, and other research facilities. The proposed project would result in cancer risks that would not exceed thresholds for receptors on campus and off campus. Results of the chronic and acute noncancer health effects assessment indicate that all of the hazard index values for each organ system would be less than 1.0. This alternative would result in a similar amount of development of facilities with potentially toxic air emissions although at an off campus location, resulting in risks similar to the proposed project. Impacts would similar to the proposed project, and would be *less than significant*.

Impact 4.3-7: Odors would be generated by construction activities, cooking, and trash receptacles on campus. Odors associated with construction would be isolated to the immediate vicinity of the site and activity. Odors from cooking would be similar to existing housing and food service uses on the campus. Trash receptacles would have lids and be emptied on a regular basis, before potentially substantial odors have a chance to develop. This alternative would result in a similar amount of development, only at an off-site location. Therefore, this alternative would not create objectionable odors affecting a substantial number of people. Impacts would be similar to the proposed project and would be *less than significant*.

Biological Resources

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. Overall, impacts would be comparable to the proposed project.

Impact 4.4-1: Development of 7.1 million gsf of academic and support facilities, consistent with the land use plan for the former March Air Force Base, would have the potential to result in adverse impacts to candidate, sensitive, or special status plant and wildlife species. Based on a draft Biological Opinion (BO) issued April 1999 by the US Fish and Wildlife Service, implementation of the March General Plan

has the potential to adversely impact the Stevens' Kangaroo Rat and Least Bell's vireo. As this alternative would involve development consistent with the land use designations in the General Plan, Alternative 4 would also have the potential to affect these species. Impacts to Least Bell's vireo could be mitigated with the measures identified in the March General Plan EIR. However, even with mitigation, development at the former March AFB would likely result in significant and unavoidable impacts to the Stevens Kangaroo Rat. Thus, impacts to candidate, sensitive, or special status plant and wildlife species would be significant and unavoidable, and would be more severe than the proposed project.

Impact 4.4-2: Development at the former March AFB could affect riparian areas on site through development on or adjacent to these areas. Potential impacts could be addressed through adherence to policies similar to those identified in the March AFB General Plan as well as relevant Mitigation Measures. Impacts would be significant but mitigable, comparable to the proposed project.

Impact 4.4-3: Development at the former March AFB could affect wetlands on site through development on or adjacent to these areas. Potential impacts could be addressed through adherence to policies similar to those identified in the March AFB General Plan as well as implementation of the identified Mitigation Measures. Impacts would be significant but mitigable, comparable to the proposed project.

Impact 4.4-4: The former March AFB is not identified as a wildlife corridor. Therefore, implementation of this alternative would not affect or impede wildlife movement. Impacts would be less than significant, and less than the proposed project.

Impact 4.4-5: Different biological resources would be affected under this alterative than that resulting from campus development, since resources affected would be those located at the former March AFB. However, this alternative would conform to applicable policies protecting biological resources as identified in the General Plan and other applicable documents, as well as relevant 2005 LRDP Planning Strategies. Impacts would be similar in severity to the proposed project, and would be less than significant.

Impact 4.4-6: Relocation of development to the former March AFB would be in substantial conformance with local applicable policies protecting biological resources or the provisions of an adopted habitat conservation plan. Although the former March AFB site is located within the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Plan Area, conservation target areas within the plan do not include portions of site or its surrounding areas. *No impact* would result, comparable to the proposed project.

Cultural Resources

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. Due to the reduced number of cultural resources at the alternative site, impacts would be less than the proposed project.

Impact 4.5-1: Historic resources at the former March AFB are located on the eastern portion of the base, away from the area where UC development would occur on the western portion of the base. No historic resources would be affected by the development. Impacts would be less severe than the proposed project, and no impacts would result. In addition, due to the location of new development off site, no historic resources on the campus would be affected. Impacts would be *less than significant*, and less than the proposed project.

Impact 4.5-2: As identified above, historic resources would not be located in the area where UC development would occur, and no historic structures would be demolished. In addition, due to the location of new development off site, no historic resources on the campus would be affected. With implementation of identified Mitigation Measures, impacts would be *less than significant*, and less than the proposed project.

Impact 4.5-3: Areas of cultural resource sensitivity are located on the former March AFB. Construction activities associated with development on the former March AFB could result in damage to or the destruction of previously unknown archaeological resources. Compliance with policies similar to those identified in the March AFB General Plan, as well as implementation of relevant 2005 LRDP Planning Strategies and existing Programs and Practices would ensure that impacts would remain less than significant. Impacts would be similar in severity to the proposed project, and would be less than significant.

Impact 4.5-4: Construction activities associated with location of development on the former March AFB could result in damage to or the destruction of previously unknown paleontological resources. The March AFB EIR does not identify the potential for paleontological resources on site. Due to proximity of March AFB to the Campus, rock and sediment types that underlie the area are unlikely to be fossil-bearing, encountering fossils during earth-disturbing construction activities remains a possibility. With the inclusion of the Mitigation Measure identified for the proposed project, this impact would be reduced to a *less-than-significant* level. Impacts would be comparable to the proposed project.

Impact 4.5-5: Areas of cultural resource sensitivity are located on the former March AFB, which includes the remote possibility of human remains. Construction activities associated with development on the former March AFB could result in damage to or the destruction of previously unidentified human remains. Compliance with policies similar to those identified in the March AFB General Plan, as well as implementation of relevant 2005 LRDP Planning Strategies and existing Programs and Practices would ensure that impacts would remain less than significant. Impacts would be comparable in severity to the proposed project, and would be *less than significant*.

Geology and Soils

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, geology and soil impacts would be comparable to the proposed project.

Impact 4.6-1: An equal amount of development would occur under this alternative, although this development would be located off site. The potential for groundshaking to affect persons and structures would not change, as a seismic event would result in similar impacts at the former March AFB as on campus. Impacts would be the same in severity as the proposed project, and with implementation of the existing relevant Program and Practice, impacts would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.6-2: The severity of impacts from erosion is related to the extent of ground clearing and excavation activities. Therefore, providing development at the off-campus alternative site instead of on campus would not change the potential for impacts from erosion. Impacts would be the same in severity as the proposed project, and with implementation of relevant LRDP Planning Strategies and continued implementation of existing Programs and Practices, impacts would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.6-3: Soils at the former March AFB have varying stability, similar to those on the campus. Therefore, the potential for structural instability, including the potential for effects from expansive soils would remain site-specific and buildings would be constructed consistent with geotechnical recommendations. With implementation of relevant LRDP Planning Strategies and continued implementation of existing Programs and Practices, this impact would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.6-4: The potential for effects from expansive soils would remain site-specific and buildings would be constructed consistent with geotechnical recommendations. Impacts would be the same in severity as the proposed project, and with continued implementation of the existing Program and Practice, this impact would be *less than significant*. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Hazards and Hazardous Materials

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. Development under this alternative would modify the severity of impacts for some thresholds, and others would remain unchanged.

Impact 4.7-1: Increases in handling and transport of hazardous materials would occur under this alternative, similar to the proposed project. Hazardous materials would be handled on and transported from the former March AFB. The overall routine transport, use, disposal, or storage of materials would continue to be conducted in compliance with existing programs and permit conditions, which would reduce potential impacts. The location logistically would have to replicate materials handling and storage at March AFB due to transportation constraints and regulations. The location on campus where hazardous materials are handled would not affect the potential for risks from these substances. With implementation of the existing Program and Practice, impacts would be *less than significant*, and would be comparable to the proposed project.

Impact 4.7-2: Development off site would decrease renovation and demolition on the campus. The former March AFB contains minimal development in areas where campus development is proposed under this alternative and therefore construction on this portion of the former base would minimize the amount of renovation and demolition that would occur. However, since some development may exist that would be demolished, the potential for risks from exposure to materials such as lead and asbestos could occur. Compliance with the existing Program and Practice, as well as laws and permit conditions would minimize these effects. Impacts would be less severe than the proposed project, and impacts would be *less than significant*.

Impact 4.7-3: Development off site would increase the amount of hazardous materials used on and transported to and from the campus, which could expose people to potential health risks in the event of an accident or accidental release, greater than the proposed project. With implementation of the existing campus Programs and Practices, this impact would be *less than significant*. As a similar amount of development would occur under this alternative, the potential for an accident or accidental release involving hazardous materials would be comparable to the proposed project.

Impact 4.7-4: Risks from exposure to soil contamination would exist due to the presence of Installation Restoration Programs (IRPs). Sources of contamination are identified through Government Code Section 65962.5. The potential for risks from exposure to soil contamination would be greater than development on campus, where encountering contamination is not anticipated. Like the proposed project, these risks would be addressed through compliance with existing regulations, in addition to policies similar to those identified in the March AFB General Plan as well as the identified Mitigation Measure. Impacts would be more severe than the proposed project, although impacts would remain *less than significant*.

Impact 4.7-5: Because the overall quantity of development and the types of uses would be the same under this alternative, the same risk of handling hazardous materials or resulting in hazardous emissions near a school would result. There are two schools located within 0.25 mile of the former March AFB where UCR development could occur. Given the range of uses proposed that would occur at the site and the siting of these schools almost 0.25 miles from the former base boundary, north of Van Buren Boulevard, it is unlikely that the schools would be subject to hazardous emissions or risks from handling hazardous materials in the area. With implementation of the existing Program and Practice, this impact would be similar in severity to the proposed project, and impacts would be *less than significant*.

Impact 4.7-6: Development at the AFB could result in construction on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could create a significant hazard to the public or the environment. However, with implementation of the applicable Mitigation Measure, appropriate soil testing would be performed prior to development to determine whether contaminants are present in amounts that would pose health hazards to construction workers and campus occupants. In addition, like the proposed project, these risks would be addressed through compliance with existing regulations, in addition to policies similar to those set forth in the

March General Plan. Impacts would be more severe than the proposed project, although impacts would remain *less than significant*.

Impact 4.7-7: Although development would be sited differently under this alternative, the same amount of development would occur. The potential for interference with adopted emergency plans would result, although emergency response routes in and around the former March AFB would be affected, rather than those on the main campus. Impacts would be addressed through mitigation measures identified for the proposed project, in addition to policies similar to those identified in the March AFB General Plan. Impacts would be the same in severity as the proposed project, and, with implementation of Mitigation Measures, would be *less than significant*.

Impact 4.7-8: Development at the former March AFB would be subject to risks from wildfires. This area contains minimal development and open areas with vegetation that could fuel a wildfire. Mitigation Measures identified for the proposed project would address impacts. Impacts would be similar in severity to the proposed project, and would be reduced to *less than significant*.

Hydrology and Water Quality

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. Development at the off-campus alternative site would modify the magnitude of impacts for some thresholds, and others would remain unchanged.

Impact 4.8-1: Development at the alternative site would result in an increase of impermeable surface area associated with new buildings and additional pavement, which would result in additional runoff (e.g., stormwater) that may contain stormwater contaminants that are typical of urbanized areas. The types of uses proposed at the alternative site would be the same as the proposed project. Therefore, the contaminant constituents contained in runoff would be similar to those resulting from the proposed project. Development at the former March AFB would similarly have the potential to effect water quality standards. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Program and Practice, impacts would be similar to the proposed project, and impacts would be *less than significant*.

Impact 4.8-2: The former March AFB is an identified area for groundwater recharge. Implementation of this alternative would introduce roads, pathways, and buildings that would reduce the areas available for groundwater recharge. Compliance with policies similar to those identified in the March JPA General Plan as well as implementation of the relevant LRDP Planning Strategies and existing Programs and Practices would reduce impacts through measures that would promote on-site infiltration. Although impacts would be more severe than the proposed project, impacts would be reduced to *less than significant*.

Impact 4.8-3: Implementation of this alternative would alter drainage patterns and expose soils to erosion during construction. These changes to drainage patterns could increase erosion or siltation. Approximately the same amount of area would be disturbed, although this alternative would result primarily in construction on vacant land, whereas the proposed project would include infill

development. The potential for changes to drainage patterns and erosion and sedimentation would thus be greater from disturbance on currently vacant land. Implementation of relevant 2005 LRDP Planning Strategies and existing Programs and Practices identified for the proposed project would minimize impacts. Impacts would be more severe than the proposed project, but would remain *less than significant*.

Impact 4.8-4: Implementation of this alternative would increase impervious surfaces within the undeveloped portions of the March JPA Planning Area, and increase surface runoff into drainage systems that could result in localized flooding. The alternative site is part of the March Joint Powers Authority Planning Area, which is, in turn, part of the Perris Valley Area Drainage Plan (ADP) and Lake Mathews ADP of the Riverside County Flood Control & Water Conservation District. The Perris Valley ADP assumed land use densities beyond those proposed by the March JPA General Plan, and this alternative would be developed at the densities identified in the General Plan. Therefore, downstream drainages would have capacity to support the stormwater flows from the project. However, facilities may not be constructed prior to implementation of this alternative, and interim facilities may be required in order to ensure that downstream flooding does not occur. Compliance with policies similar to those identified in the March JPA General Plan as well as existing Programs and Practices would address impacts associated with flooding. Impacts would be more severe than the proposed project, but would remain *less than significant*.

Impact 4.8-5: Implementation of this alternative would increase impervious surfaces within the undeveloped portions of the March JPA Planning Area, and increase surface runoff into drainage systems. Runoff would contain urban stormwater contaminants, and could exceed the capacity of existing storm drain systems. Although downstream drainages would have capacity to support the stormwater flows from the project, these facilities may not be constructed prior to implementation of this alternative, and interim facilities may be required. With implementation of existing Programs and Practices, this impact would be *less than significant*, but would be more severe than the proposed project.

Impact 4.8-6: Development of this alternative would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems to accommodate the new development on the March AFB. However, with the incorporation of existing campus Programs and Practices and mitigation measures discussed in other resource sections for the 2005 LRDP, it is anticipated that the construction of these facilities would not individually result in significant environmental impacts. As limited infrastructure currently exists, the extent of improvements would be greater that the proposed project. Impacts would be more severe than the proposed project, but would remain *less than significant*.

Impact 4.8-7: Implementation of this alternative would not otherwise substantially degrade water quality. With continued adherence to waste discharge regulations and NPDES permit conditions, these impacts would be *less than significant*, comparable to the proposed project.

Impact 4.8-8: Flood hazard areas are identified at the former March AFB on the far eastern portion of the site near Heacock Avenue. This alternative proposes development on the western portion of the site, west of Interstate 215. Therefore, this alternative would not result in the placement of housing in areas

within a 100-year flood hazard area. The severity of impacts would be less than the proposed project, and *no impact* would result.

Impact 4.8-9: Flood hazard areas are identified at the former March AFB on the far eastern portion of the site near Heacock Avenue. This alternative proposes development on the western portion of the site, west of Interstate 215. Therefore, this alternative would not result in the placement of structures in areas within a 100-year flood hazard area, and development would not impede or redirect flood flows. The severity of impacts would be less than the proposed project, and *no impact* would result.

Impact 4.8-10: Relocation of development to the alternative site would alter site drainage patterns but would not expose people or structures to significant risk of loss, injury, or death involving flooding. With implementation of the existing Program and Practice identified, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.8-11: Rolling hills on western portions of the alternative site could be subject to mudflows following heavy rainfall. This hazard would pose a constraint to development that would require engineering design methods to minimize risks. Compliance with these methods and other policies similar to those identified in the March AFB General Plan, as well as relevant 2005 LRDP Planning Strategies and existing Programs and Practices would reduce risks from mudflows. Development at the former March AFB would not expose people or structures to a significant risk of loss, injury, or death involving dam or pipeline rupture, or inundation by seiche, tsunami, or mudflow. Due to potential risk of mudflows, impacts would be more severe than the proposed project, but would be *less than significant*.

Land Use and Planning

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. Development under this alternative would increase the severity of land use and planning impacts.

Impact 4.9-1: This alternative would result in development of about 7.1 million gsf at the former March AFB. Uses would be more intense than those currently existing at the site, as development on the western portion of the former base is extremely limited. Uses would be developed at the intensities identified in the General Plan, including a maximum FAR between 0.6 and 0.75, depending on the particular area. Development of uses at these intensities are not anticipated to conflict with surrounding development. With implementation of relevant 2005 LRDP Planning Strategies and the existing Programs and Practices, campus uses would generally be compatible with other uses proposed on site, which include business park, recreation, and commercial uses, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.9-2: Implementation of this alternative would preclude business park, industrial, and commerce uses planned for the area under the March JPA General Plan. Uses would not be in conformance with those identified in the plan. Impacts would be increased in severity to the proposed

project, and the conflicts between this alternative and the uses designated for the site would result in *significant and unavoidable* impacts.

Impact 4.9-3: Although development would be sited in a different location under this alternative, the fundamental planning principles of the LRDP would remain the same. Therefore, the project would remain in conformance with SCAG policies and applicable resource conservation plans. However, as previously mentioned, the project would preclude implementation of the uses specified in the March General Plan, including business park, industrial, and commerce uses. Impacts would be greater in severity to the proposed project, and impacts would be *significant and unavoidable*.

Noise

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.10-1: On-campus residential interior noise levels under the proposed project would not exceed the State's 45 dBA CNEL interior noise standard. Under this alternative, the same amount of development and noise generating activities would result, although these would occur at an off-site location. Noise levels at the former March AFB would continue to be dominated by vehicular traffic on adjacent roadways, although occasional aircraft noise would also be perceptible from airfield operations. Mechanical equipment on building rooftops would generate noise, similar to the proposed project. Because the total amount of development is anticipated to be similar to that occurring under the proposed project, resulting noise levels from the project would also be similar. Aircraft noise would result in higher background noise levels than at the proposed project site, although the alternative site is outside of the 75-dBA noise contour. Residential interior noise levels under this alternative would remain below 45 dBA CNEL. Impacts would be greater than the proposed project, although impacts would be *less than significant*.

Impact 4.10-2: Typical construction activities would remain the same as those identified for the proposed project, only these activities would occur at the former March AFB. Because there would be the same amount of development under this alternative, the duration of construction would be the same and the potential for overlapping construction activities to occur would also be the same as the proposed project. Therefore, similar to the proposed project, vibration levels could reach up to 87 VdB at buildings located 25 feet from construction. Mitigation Measures identified for the proposed project would reduce impacts, but not to less-than-significant levels. This impact would be *significant and unavoidable*, comparable to the proposed project.

Impact 4.10-3: Since there would be the same amount of development under this alternative, the duration of construction would be the same and the potential for overlapping construction activities to occur would also be the same as the proposed project. In areas adjacent to the alternative site, vibrational and noise effects from construction would also be similar to the proposed project. Vibrational effects

would be below the Federal Railway Administration's 80 VdB threshold. Thus, construction at the former March AFB site would not expose off-campus persons to excessive groundborne vibration or groundborne noise levels. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.10-4: Under the proposed project, background operational vibration levels on the campus are anticipated to be about 50 VdB. Development would be the same under this alternative, and would result in similar levels of groundborne vibration, although these vibration levels would occur at the alternative site. The 50 VdB projected to occur under the proposed project would not exceed thresholds of 65 VdB for sensitive on-campus research buildings, 80 VdB at residences and student housing buildings, and 83 VdB at other institutional buildings. The March General Plan EIR did not identify any issues related to vibrational effects from aircraft operations. Therefore, this alternative, which would have similar operational vibration levels, would also not exceed thresholds. Impacts would be less than the proposed project, and would *be less than significant*.

Impact 4.10-5: Noise levels would increase due to increased vehicular traffic associated with the campus. Under the proposed project, the changes to vehicular trips and circulation patterns would result in an increase in noise levels by a maximum of 3.5 dBA CNEL at one location, and the maximum increase at any other location would be 2.5 dBA CNEL, which is inaudible/imperceptible to most people. The increase in vehicular traffic would be greater under this alternative, due to trips between the two campuses. The increased traffic volumes, however, would not be anticipated to generate perceptible noise increases. Increases in noise levels under this alternative would be greater than the proposed project, but would be *less than significant*.

Impact 4.10-6: Stationary noise sources would be added to the campus due to increased development. HVAC equipment would generate levels of less than 51 dBA Leq with shielding. Existing campus noise levels average 54 to 69 dBA Leq. This alternative would change the location of development, although the amount of development would remain the same. The incremental increase in noise levels from installation of HVAC equipment on new buildings at the former March AFB site would be slightly greater than the proposed project, as there is no Thermal Energy Storage tank at the former March AFB site, and noise would affect a different set of sensitive receptors. However, the incremental difference in noise would not be substantial, as most new building equipment is either placed on rooftops and shielded by building features or placed underground and often remains unheard. With implementation of the relevant 2005 LRDP Planning Strategy and continued implementation of the existing Programs and Practices, impacts from stationary noise sources would be similar to the proposed project, and would be *less than significant*.

Impact 4.10-7: Under the proposed project, construction could result in substantial temporary or periodic increases in ambient noise levels at locations on campus. Construction noise levels could increase more than 10.0 dBA Leq over the existing daytime noise levels at nearby on-campus buildings, thereby affecting on-campus classrooms, office, and residential uses. As development would be the same under this alternative, the amount of new construction would also be similar to the proposed project. Thus, construction noise would increase by more than 10 dBA at selected locations. Even continued

implementation of existing campus Programs and Practices would not ensure that construction noise levels would not increase by less than 10 dBA at noise sensitive uses located in close proximity to the construction sites. As such, this impact would be *significant and unavoidable*, comparable to the proposed project.

Impact 4.10-8: As there would be the same amount of development under this alternative, the duration of construction would be the same and the potential for overlapping construction activities to occur would also be the same as the proposed project. Therefore, in areas adjacent to the alternative site, noise effects from construction would also be similar to the proposed project. As is true for the proposed project, any residential uses that are located less than 100 feet from the construction sites at the former March AFB could experience ambient noise levels that are increased by 10 dBA or more. Even with implementation of the existing Programs and Practices, this impact would be *significant and unavoidable*, comparable to the proposed project.

Impact 4.10-9: Implementation of the proposed project could result in temporary or periodic increases in ambient noise levels due to special events. Under the proposed project, the increase in number of students living at the campus could increase the number of these occasional special events. However, these events would not result in substantial temporary or periodic increases in ambient noise levels although events could occur on more days per year. With all new development concentrated at the former March AFB under this alternative, the amount of special events for UCR is anticipated to be split between the two campuses. Therefore, this impact would be *less than significant*, and would be less than the proposed project.

Population and Housing

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, population and housing impacts would be comparable to the proposed project.

Impact 4.11-1: The same student increase would occur under this alternative, and this increase would be accommodated by LRDP development. This alternative would accommodate population growth through expanded enrollment capacity. Substantial increases in the population on March AFB would result. Population impacts likely occur in both the City of Riverside and the City of Moreno Valley, which lies adjacent to March AFB. Impacts would be similar in severity to the proposed project, and impacts would be *less than significant*.

Impact 4.11-2: Due to the same student increase under this alternative, the same increases in housing demands would result. Although development under this alternative would be sited differently than under the proposed project, LRDP objectives of providing housing for 50 percent of students would remain. Therefore, the same number of students would be accommodated in on-campus housing as the proposed project. Housing demands from students, faculty, and staff would comprise a small portion of the total demand in the City and region. With implementation of the relevant 2005 LRDP Planning

Strategy, impacts would be similar in severity to the proposed project, and impacts would be *less than significant*.

Impact 4.11-3: The placement of development off site would remove the proposed demolition of family housing on the East Campus. The proposed project identified replacement of housing on campus such that no net loss of housing or displacement of residents would result. Therefore, the net effect of either the project or this alternative would be the same. With implementation of the relevant 2005 LRDP Planning Strategy, impacts would be similar in severity to the proposed project, and impacts would be *less than significant*.

Impact 4.11-4: The proposed project identified replacement of housing on campus such that no net loss of housing or displacement of residents would result. As such, impacts of either the project or this alternative would be the same. Implementation of this alternative would not displace substantial numbers of people that would necessitate the construction of replacement housing elsewhere, and impacts would be similar in severity to the proposed project, and would be *less than significant*.

Public Services

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base and would affect different service providers than the proposed project. As an equivalent level of development would occur, public service impacts would be comparable to the proposed project.

Impact 4.12-1: The same growth in terms of additional students and development would occur under this alternative, although this growth would occur off campus. Consequently, additional demands on fire services would be the same as under the proposed project. However, the additional development would increase demands to the County of Riverside Fire Department, which currently serves the area rather than City services affected under the proposed project. An expansion of existing services and possibly facilities is identified as necessary to serve future development at the former March AFB site in order to meet the needs of the satellite campus location. With implementation of the relevant 2005 LRDP Planning Strategy and exiting Programs and Practices, impacts would be increased in severity compared to the proposed project, but would be *less than significant* with mitigation.

Impact 4.12-2: Additional demands on police services would be the same as under the proposed project. However, the additional development would increase demands to the County of Riverside Sheriffs Department, which currently serve the area rather than City services affected under the proposed project. An expansion of existing services and possibly facilities is identified as necessary to serve future development at the former March AFB site. UCRPD would provide primary law enforcement service to the site, and this service would need to be expanded to meet the needs of the satellite campus location. With implementation of the relevant 2005 LRDP Planning Strategy and existing Programs and Practices, impacts would be increased in severity compared to the proposed project, but would be *less than significant* with mitigation.

Impact 4.12-3: Since enrollment growth would be the same under this alternative, the same number of faculty and staff with students that would need to be accommodated in local schools would be generated. As implementation of this alternative would result in an increase in the number of students attending RUSD schools that would be below the planned increase in District capacity, impacts would be the same in severity as the proposed project, and impacts would be *less than significant*.

Impact 4.12-4: The increase in faculty, staff, and commuter students under this alternative would also increase the demand for City and county library services. Since the amount of faculty, staff, and students would be the same as the proposed project, the impact associated with additional demands for library services would also be the same. This impact would be similar in severity to the proposed project, and would be *less than significant*.

Recreation

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. This alternative would result in development of recreational facilities at the alternative site to the same extent as those proposed on campus for the project. Future recreational demands would be met through these new facilities in combination with existing facilities. As an equivalent level of development would occur, impacts to recreational facilities would be comparable to the proposed project.

Impact 4.13-1: The same increase in the UCR population would occur under this alternative, although it would be supported by facilities at an alternative site. The same increased demands on recreational facilities would occur as the proposed project. This alternative would result in development of recreational facilities at the alternative site to the same extent as those proposed on campus for the project. Future recreational demands would be met through these new facilities in combination with existing facilities. With implementation of the relevant 2005 LRDP Planning Strategies, impacts would be the same in severity as the proposed project, and impacts would be *less than significant*.

Impact 4.13-2: Development of recreational facilities would result in short term impacts to a number of resources, including air quality, biological resources, cultural resources, geology and soils, noise and vibration, and transportation/traffic. Impacts to all resources would be mitigable to less than significant, with the exception of air quality. Like the proposed project, development of on-campus recreational facilities would not result in impacts beyond those identified for the specific resources analyzed. Thus this impact would be *less than significant*, comparable to the proposed project

Impact 4.13-3: Development off campus would limit the conversion of existing recreational fields to other uses on the East Campus. Under the proposed project, development of new recreational space would replace existing recreational facilities to be removed. Under this alternative, the potential for the conversion of existing fields would be reduced, although the net effect would remain the same, since new facilities would be developed. With implementation of relevant 2005 LRDP Planning Strategies, impacts would be the same in severity as the proposed project, and would be *less than significant*.

Transportation/Traffic

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, impacts would generally be comparable to the proposed project.

Impact 4.14-1: Concentration of all new development on the former March AFB site would result in additional vehicular trips to the site by students, faculty, and staff, which would increase traffic volumes and degrade intersection levels of service. Under this alternative, the amount of new vehicular trips generated by the net increase in academic development under the 2005 LRDP would be shifted from the UCR campus to the former March AFB site. It is anticipated that this new traffic volume, in addition to the traffic generated by new development resulting from implementation of the March AFB General Plan, would degrade the intersection levels of service in the vicinity of the March AFB site. Similar to the proposed project, all off-campus intersection improvements at this alternative site would be within the jurisdiction of the County of Riverside, not the University, to implement. As such, this impact would be *significant and unavoidable*. Although all new development would occur on the March AFB site, the campus population and parking inventory would be the same as the proposed project, therefore trip generation would be equivalent, and impacts to local streets would be comparable to the proposed project. However, there would be the potential for more trips as people, deliveries, and services travel from one location to the other.

Impact 4.14-2: Concentration of all new development on the former March AFB site would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. As is true for the proposed project, even with continued implementation of the applicable campus Program and Practice that would require coordination of construction activities to avoid overlap of activities with heavy truck traffic, construction vehicle traffic under this alternative may still result in localized impacts because of the imprecise nature of construction schedules, and the need to accommodate the anticipated enrollment increases and program growth identified in the 2005 LRDP. Thus, this impact would be *significant and unavoidable*. As the total amount of new development under this alternative would be the same as the proposed project, impacts would be comparable to the proposed project.

Impact 4.14-3: Concentration of all new development on the former March AFB site would result in additional vehicular traffic volumes, which may exceed established service levels on roadways designated by the Riverside County Congestion Management Program. The additional vehicular trips generated by development on this site along with trips generated from new development designated under the March AFB General Plan in the area may adversely impact traffic conditions on the I-215, which is located west of the site. As such, this impact would be *significant and unavoidable*. Since the March AFB site is located in a more remote location than the UCR campus from nearby freeways, impacts would be less than the proposed project.

Impact 4.14-4: Concentration of all new development on the former March AFB site would not result in hazards due to design features or land use incompatibilities. With implementation of LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-5: With concentration of all new development on the former March AFB site, construction could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. Construction activities could result in temporary closure of traffic lanes or roadway segments to permit the delivery of construction materials or to provide adequate site access. With continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-6: With concentration of new development on the former March AFB site, construction would not substantially increase pedestrian hazards due to closure of sidewalks or paths. With implementation of the existing Program and Practice, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-7: Concentration of new development on the former March AFB site would not impair emergency access in the long-term. Although implementation of this alternative would generate additional vehicle trips compared to existing conditions, it is anticipated that emergency vehicles will be able to traverse the roadways and intersections that may potentially be impeded from the increase in traffic volume. As is true for the proposed project, emergency vehicles are also anticipated to traverse roadways in other major jurisdictions where traffic conditions are severely congested by generally requiring vehicles to move over in order for the emergency vehicles to pass through. On some limited occasions, because of extended congestion, emergency vehicles may be required to cross to opposing traffic lanes (e.g., to travel westbound in eastbound traffic lanes), use the median, or a bicycle lane, to get around congested road segments or intersections. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-8: With concentration of all new development on the former March AFB site, construction could impair emergency access during the short-term. Construction activities could potentially affect emergency response due to temporary construction barricades or other obstructions that could impede emergency access on campus. With implementation of the existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-9: Concentration of all new development on the former March AFB site would not result in inadequate parking capacity, as the parking inventory would be the same as the proposed project. With implementation of the relevant 2005 LRDP Planning Strategies and existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-10: Concentration of all new development on the former March AFB site would not increase demand for parking in areas adjacent to the campus. Parking would be provided along with the new academic facilities at the former March AFB site. This impact would be *less than significant*. As the

demand for parking in areas adjacent to the campus would be lesser in magnitude than the proposed project, this impact would be less than the proposed project.

Impact 4.14-11: Although the construction of new development on the former March AFB would not result in temporary elimination of on-campus parking spaces, it could require the provision of temporary parking for construction workers. With inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.14-12: Concentration of all new development on the former March AFB would not conflict with applicable policies, plans, or programs supporting alternative transportation. With inclusion of the identified Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.14-13: Concentration of all new development on the former March AFB site would increase demand for public transit by students, faculty, and staff. The Riverside County Transportation Commission (RCTC) is Riverside County's primary transportation agency, and oversees public bus operators such as the Riverside Transit Agency, which provides several bus routes with service to the former March AFB site. The increase in demand for public transit serving the former March AFB site may require the expansion of the current transit system. However, with inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Utilities

Under Alternative 4, none of the impacts of the proposed project would occur at the UCR campus. Development of future academic and support facilities at the alternative site would result in potential impacts occurring at the former March Air Force Base. As an equivalent level of development would occur, impacts would be comparable to the proposed project.

Impact 4.15-1: Off-site development would generate additional demand for water, but would not require the construction of new or expanded water treatment facilities, as there are sufficient water supplies to serve the project from existing entitlements and resources, similar to the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-2: Off-site development 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, as there are sufficient water supplies to serve the project from existing entitlements and resources, similar to the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-3: Location of the project at an alternative site would not change the solid waste generated by the project. This alternative would not generate quantities of solid waste that would require the

expansion of the permitted capacity of a regional landfill. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-4: Solid waste reduction programs would be in effect at the alternative site. Development under this alternative would continue to comply with all applicable federal, State, and local statutes and regulations related to solid waste. This impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-5: Off-site development would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. With implementation of the relevant 2005 LRDP Planning Strategies and continued implementation of existing Programs and Practices, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-6: Due to the limited infrastructure at the former March AFB, development of this alternative could require the construction of new or expanded wastewater conveyance systems. With the inclusion of the identified Mitigation Measures, this impact would be reduced to a *less-than-significant* level, comparable to the proposed project.

Impact 4.15-7: Off-site development would not increase wastewater generation such that treatment facilities would be inadequate to serve the project and the provider's existing commitments. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-8: Off-site development would increase the demand for electricity, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, comparable to the proposed project, but would result in development of more distribution infrastructure.

Impact 4.15-9: Off-site development would 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 a significant environmental impact. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project, but would require more distribution facilities.

Impact 4.15-10: Off-site development would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, comparable to the proposed project.

Relationship to Project Objectives

Alternative 4 would allow for full development envisioned under the project, although it would not meet all of the 2005 LRDP objectives. This alternative would allow for development of 7.1 million gsf of new development and would accommodate up to 25,000 students at UCR. The on-campus housing goal of 50 percent would also be met. The campus would still be able to further its academic, research, and

public service mission, as it would allow for the State-mandated enrollment growth and provide campus facilities to accommodate academic and research needs. As directed by the UC, the accommodation of 25,000 students by UCR would absorb the enrollment growth resulting from the projected increase in the number of high school graduates over the next decade. As such, the University would achieve the 2005 LRDP objective that seeks to ensure student access in a manner consistent with the Master Plan for Higher Education in California, while continuing to enhance the quality of the academic program and meeting the University enrollment growth target of 25,000 students at UCR by 2015/16.

However, this alternative would provide development at a site other than the project site, which would preclude the campus expanding its existing facilities, which is the underlying intent of the project, as it is the LRDP for the UCR Campus. As stated in section 3.4, the objectives of the LRDP include infilling development of the East Campus; expanding to the West Campus; and renovation, restoration, and reconstruction of existing buildings. These objectives can only be met by developing at the existing UCR campus. In addition, this alternative would not meet the objective of allowing for an increase in the size/critical mass of the on-campus community, but would result in a fragmented campus where academic and research disciplines would be located on two separate campuses and would not fully realize the benefits of location on the same campus. Therefore, this alternative would not satisfy project objectives. Further, there are approved projects at the March AFB site that could affect the feasibility of this alternative.

6.3.5 Alternative 5: Reduced On-Campus Housing

Under the Reduced On-Campus Housing Alternative, the on-campus housing goal would be limited to 35 percent of enrollment (compared to the 50 percent goal proposed in the 2005 LRDP). With a proposed future enrollment of 25,000 students, housing would be provided for approximately 8,750 students, an increase of 4,603 student beds (above existing conditions). All other proposed (non-housing) development would remain the same as the proposed LRDP. With approximately 3,750 fewer beds of housing, future on-campus development would be reduced to approximately 6.10 million new gsf, approximately 1 million gsf less than the proposed project. It is assumed that the distribution of students would be similar to current conditions, with students not housed on campus residing in the City of Riverside. Given that housing must be sell supporting (i.e., not state funded), campus housing must be priced competitively with the market to remain fully occupied. The University's ability to develop housing is dependent on financial feasibility to meet its target.

Comparison of Environmental Effects

Aesthetics

Under Alternative 5, approximately 1 million gsf less development would occur, which could result in the development of fewer buildings and a reduced density of future development. As a result, aesthetic impacts would generally be reduced compared to the proposed project.

Impact 4.1-1: Development of academic and support space under the reduced on-campus housing alternative would be similar to the proposed project; however, the on-campus housing goal would be

lowered from 50 to 35 percent, resulting in 3,750 fewer beds than the proposed 2005 LRDP. The Carillon Mall would continue to be designated as open space, while the Lower Intramural Field would be subject to development, similar to the proposed project. With implementation of the identified LRDP Planning Strategies, no substantial adverse effects on a scenic vista (e.g., views of the Box Springs Mountains) would occur, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.1-2: With development of approximately 6.1 million gsf of academic and support facilities under the reduced on-campus housing alternative, future development could substantially degrade the visual character or quality of the campus and the immediate surrounding area. However, as fewer on-campus residences would be developed, edge conditions in the northeastern portion of the campus would be affected to a lesser degree. With implementation of LRDP Planning Strategies and identified Programs and Practices for the proposed project, this impact would be *less than significant*. As approximately 1 million gsf less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.1-3: With development of approximately 6.1 million gsf of academic and support facilities under the reduced on-campus housing alternative, future development could create new sources of substantial light or glare in the campus area or vicinity that would adversely affect day or nighttime views from adjacent land uses. Assuming implementation of applicable Mitigation Measures, this impact would be *less than significant*. As approximately 1 million gsf less development would occur under this alternative, impacts would be less than the proposed project.

Agricultural Resources

Under Alternative 5, approximately 1 million gsf less development would occur, which could result in the development of fewer buildings, and a reduced density of future development, which could include reduced development on the West Campus. As a result, agricultural resource impacts would generally be less than the proposed project.

Impact 4.2-1: Implementation of the reduced on-campus housing alternative would result in the loss of 108 acres of agricultural land, 17 fewer acres than estimated for the proposed project. The loss of agricultural land would therefore, be less than the proposed project. Although the severity of this impact would be less than the proposed project, even with implementation of the relevant 2005 LRDP Planning Strategy, no feasible mitigation has been identified to reduce this impact, which would remain *significant and unavoidable*.

Impact 4.2-2: Implementation of the reduced on-campus housing alternative would not result in land use changes that would conflict with existing zoning for agricultural use or a Williamson Act contract, as there are no areas on site that are zoned for agricultural uses or covered by Williamson Act contracts. Thus, *no impact* would occur, comparable to the proposed project.

Impact 4.2-3: Implementation of the reduced on-campus housing alternative would not involve other changes that could convert farmland to nonagricultural use. With implementation of the relevant 2005

LRDP Planning Strategy, impacts would be *less than significant*. As less on-campus development would occur, this impact would be less than the proposed project.

Air Quality

Under Alternative 5, future enrollment would reach 25,000 students; however, approximately 3,750 fewer students would reside in University housing, and approximately 1.0 million gsf less development would occur, compared to the proposed project. This would generally result in air quality impacts that are less than the proposed project.

Impact 4.3-1: The reduced housing alternative would not conflict with or obstruct implementation of the Air Quality Management Plan for the South Coast Air Basin. Under this alternative, approximately 1.0 million gsf less development would occur as compared with the proposed project. Since the proposed project is included in the projections utilized in the formulation of the AQMP, this alternative would also be within the projections utilized in the formulation of the AQMP and thus would not increase population within the County beyond that already projected. With implementation of the applicable LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, this alternative would neither conflict with nor obstruct implementation of the AQMP. Therefore, this alternative would not conflict with the AQMP and this impact would be *less than significant*. With less development under this alternative, this impact would be less than the proposed project.

Impact 4.3-2: The reduced housing alternative would result in construction activities that would generate criteria pollutants, which could contribute substantially to an existing or projected air quality violation. In general, the daily maximum amount of construction that could occur under the reduced housing alternative would be the same as the 2005 LRDP. However, because this alternative would result in approximately 1.0 million gsf less of development than the proposed project, the duration of construction would be less. As indicated in the project-specific analysis, it is difficult to precisely quantify daily emissions, due to the normal variability in construction activities. Assuming the same amount of peak construction activity on a given day, construction under this alternative would have the potential to exceed thresholds for NOx. Even with implementation of the identified Mitigation Measures, impacts would remain *significant and unavoidable*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.3-3: The reduced housing alternative could result in an increase in daily emissions associated with stationary sources for space and water heating, landscape maintenance activities, and use of consumer products, in addition to increased vehicular trips and their associated emissions. Although this alternative would result less development, this reduction in development or enrollment potential is unlikely to reduce air emissions below applicable thresholds, and impacts would be *significant and unavoidable*, despite implementation of the identified Mitigation Measures. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.3-4: If a project would result in a one percent per year reduction in project emissions of CO, VOC, NOx, SOx, and PM10, then it would not result in a cumulatively considerable net increase of any criteria pollutant for which the region is in nonattainment under an applicable federal or State ambient air quality standard. Under the proposed project, implementation of the TDM program, energy conservation efforts, and use of Best Available Control Technology programs to reduce the emissions that would otherwise be generated by the campus would result in emissions reductions that are substantially more than one percent on an annual basis. As these air quality management programs are mandated by the SCAQMP, they would remain in effect under the reduced housing alternative. Therefore, this alternative would result in impacts similar to the proposed project, and impacts would be *less than significant*.

Impact 4.3-5: The reduced housing alternative could result in substantial pollutant concentrations in the form of CO hotspots at intersections, due to increased traffic congestion. The proposed project would result in CO concentrations well below federal and State 1- and 8-hour standards. As the table shows, trip generation rates for individuals living on-campus are higher than trip generation rates for student commuters. Thus, while there would be more persons commuting long distances to the campus, the decrease in on-campus housing would reduce the total number of trips generated. Because vehicle trip generation would be less than the proposed project, CO concentrations generated under this alternative would also be below federal and State standards. Impacts would therefore be *less than significant*, and would be less than the proposed project.

Impact 4.3-6: The reduced housing alternative would result in the emission of toxic air contaminant by teaching and research laboratories, greenhouses, and other research facilities. The proposed project would result in cancer risks well below thresholds for receptors on campus and off campus. Results of the chronic and acute noncancer health effects assessment indicate that all of the hazard index values for each organ system would be less than 1.0. As this alternative would result in less development than the proposed project, fewer facilities that could emit toxic air contaminants (including boilers and other equipment in housing facilities) would be developed, resulting in even lower risks than those identified as less than significant for the proposed project. Impacts would be *less than significant*, and would be less than the proposed project.

Impact 4.3-7: The reduced housing alternative would result in the generation of odors as a result of construction activities, cooking, and trash receptacles on campus. Odors associated with construction would be isolated to the immediate vicinity of the site and activity. Odors from cooking would be similar to existing housing and food service uses on the campus. Trash receptacles would have lids and be emptied on a regular basis, before potentially substantial odors have a chance to develop. Therefore, this alternative would not create objectionable odors affecting a substantial number of people, and this impact would be *less than significant.* As less development would result under this alternative, this impact would be less than the proposed project.

Biological Resources

Under Alternative 5, approximately 1 million gsf less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. As a result, biological resource impacts would generally be less than the proposed project.

Impact 4.4-1: Implementation of the reduced on-campus housing alternative could still result in adverse impacts to candidate, sensitive, or special status plants and wildlife species, due to the location and extent of future development. With implementation of applicable mitigation measures, these impacts would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project

Impact 4.4-2: Implementation of the reduced on-campus housing alternative could affect the designated habitat for the California Gnatcatcher in the southeastern portion of the campus and result in the modification or loss of riparian habitat, and a reduction in on-campus housing would not affect this impact. Assuming implementation of applicable mitigation measures, impacts would be *less than significant*. Although less development would occur under this alternative, impacts would be comparable to the proposed project.

Impact 4.4-3: Implementation of the reduced on-campus housing alternative could result in a substantial adverse effect on federally protected wetlands due to development in, or adjacent to, existing on-campus arroyos. Development would proceed in a similar manner under this alternative, with the exception of providing fewer on-campus residences. This may reduce the extent of impacts on arroyos, although development could still occur in these locations. With implementation of applicable mitigation measures, impacts would be *less than significant*. Since less total development would occur, impacts would be less than the proposed project.

Impact 4.4-4: Implementation of the reduced on-campus housing alternative could interfere with the movement of native resident or migratory wildlife species or corridors. Since implementation of this alternative would result in limited development in the southeast hills (none of which would construct physical barriers to movement across the hills that would significantly restrict wildlife movement across the area), potential affects to wildlife movement would be limited to development within or adjacent to existing arroyos, although less development could occur within arroyos. With the inclusion of applicable mitigation measures, this impact would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.4-5: Implementation of the reduced on-campus housing alternative would be in substantial conformance with local applicable policies protecting biological resources, as development would occur in a similar manner on the campus, but with fewer housing units. With implementation of relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*. Although less development would occur under this alternative, this impact would be similar to the proposed project.

Impact 4.4-6: Implementation of the reduced on-campus housing alternative would be in substantial conformance with local applicable policies protecting biological resources or the provisions of an adopted

habitat conservation plan and *no impact* would result. This impact would be comparable to the proposed project.

Cultural Resources

Under Alternative 5, approximately 1 million gsf less development would occur, which could result in the development of fewer buildings, and a reduced density of future development. As a result, cultural resource impacts would generally be less than the proposed project.

Impact 4.5-1: Implementation of the reduced on-campus housing alternative could result in renovation or modification of historic or potentially historic structures. These modifications could adversely affect the historical significance of these structures by altering their character or setting. With implementation of the applicable mitigation measure, impacts would be *less than significant*. Since the number of historic or potentially historic buildings that could be subject to modification would be the same under the 2005 LRDP, impacts would be comparable to the proposed project.

Impact 4.5-2: Implementation of the reduced on-campus housing alternative could result in the demolition of historical or potentially historic structures, and, even with implementation of relevant 2005 LRDP Planning Strategies and existing Programs and Practices, impacts would remain *significant*. Thus, similar to the proposed project, significant impacts associated with the demolition of historic or potentially historic structures would result. Although less development would occur, the reduction in new on-campus housing would not affect the potential for historic buildings to be demolished, due to the location of the new housing under the proposed project. Impacts would be comparable to the proposed project.

Impact 4.5-3: Implementation of the reduced on-campus housing alternative could result in damage or destruction of previously unknown archaeological resources due to construction activities. With continuation of the identified existing campus Program and Practice as well as implementation of relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.5-4: Implementation of the reduced on-campus housing alternative could result in damage or destruction of previously unknown paleontological resources as a result of construction activities. Although the rock and sediment types that underlie the Campus are unlikely to be fossil-bearing, encountering fossils during earth-disturbing construction activities remains a possibility. With implementation of the applicable Mitigation Measure, impacts would be *less than significant*. As less development would occur under this alternative, impacts would be less than the proposed project.

Impact 4.5-5: Implementation of the reduced on-campus housing alternative could result in the disturbance of human remains as a result of construction activities. With continued implementation of the identified campus Programs and Practice as well as implementation of relevant 2005 LRDP Planning Strategies, impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Geology and Soils

Under Alternative 5, on-campus housing would be reduced, which would result in development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. With less development that would occur, geology and soil impacts would generally be less than the proposed project.

Impact 4.6-1: Implementation of the reduced on-campus housing alternative could expose people and/or structures to potentially substantial adverse effects related to seismic ground shaking; however, with continuation of existing campus Programs and Practices related to preparation of a geotechnical report and adherence to the recommendations of the report (per the University Policy on Seismic Safety), this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.6-2: Implementation of the reduced on-campus housing alternative could result in substantial soil erosion and the loss of topsoil as a result of construction activities. However, with implementation of relevant 2005 LRDP Planning Strategies and continuation of existing campus Programs and Practices related to preparation of a geotechnical report and adherence to the recommendations of the report, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.6-3: Implementation of the reduced on-campus housing alternative could result in development in areas subject to soil hazards such as landsliding, lateral spreading, subsidence, liquefaction, collapse, or differential settlement. With implementation of relevant 2005 LRDP Planning Strategies and continued implementation of existing Programs and Practices, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.6-4: Implementation of the reduced on-campus housing alternative could result in development on expansive soils. However, with implementation of the existing Program and Practice, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Hazards and Hazardous Materials

Under Alternative 5, on-campus housing would be reduced, which would result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. With less development that would occur, hazards and hazardous materials impacts would generally be less than the proposed project.

Impact 4.7-1: Implementation of the reduced on-campus housing alternative 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). With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance

with applicable regulations) and continued compliance with permit conditions, impacts would be *less than significant*. Although less development would occur under this alternative, the reduction in development would be related to housing, and would not affect incremental increase in the transport, usage, disposal, and storage of hazardous materials. Impacts would be similar to the proposed project.

Impact 4.7-2: Implementation of the reduced on-campus housing alternative could expose construction workers and campus occupants to significant health or safety risks through renovation or demolition of buildings, or relocation of underground utilities that contain hazardous materials. With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance with applicable regulations) and continued compliance with permit conditions, impacts would be *less than significant*. Although less development would occur under this alternative, the reduction in development would be related to housing, and would not affect the number of buildings demolished and renovated. Impacts would be similar to the proposed project.

Impact 4.7-3: Implementation of the reduced on-campus housing alternative would not increase the amount of hazardous materials used on and transported to and from the campus, which could expose people to potential health risks in the event of an accident or accidental release. With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance with applicable regulations) and continued compliance with permit conditions, risks associated with an accident or accidental release would be *less than significant*. Although less development would occur under this alternative, the reduction in development would be related to housing, and would not affect transport of hazardous materials. Impacts would be similar to the proposed project.

Impact 4.7-4: Implementation of the reduced on-campus housing alternative could create a significant risk of exposure of construction workers and campus occupants to contaminated soil or groundwater. With implementation of applicable mitigation measures related to soil and groundwater contamination, impacts would be *less than significant*. As less development would occur under this alternative, the potential for contaminated soil and groundwater to be encountered during construction would be reduced, and this impact would be less than the proposed project.

Impact 4.7-5: Implementation of the reduced on-campus housing alternative could result in hazardous emissions or require the handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school. With continued implementation of existing Programs and Practices (e.g., implementation of measures in accordance with applicable regulations) and continued compliance with permit conditions, risks associated with the transport, use, disposal, or storage of hazardous materials within a quarter mile of an existing or proposed school would be *less than significant*. Although less development would occur under this alternative, the reduction in development would be related to housing, and would not affect the potential for hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste. Impacts would be comparable to the proposed project.

Impact 4.7-6: Implementation of the reduced on-campus housing alternative would not result in construction on a site that is included on a list of hazardous materials sites compiled pursuant to

Government Code Section 65962.5. With continued implementation of the applicable Mitigation Measure, no construction would occur on any current or former listed sites, this impact would be *less than significant*, comparable to the proposed project.

Impact 4.7-7: Implementation of the reduced on-campus housing alternative could result in the siting and development of new buildings and facilities that may currently be identified as emergency assembly areas or evacuation routes. However, with implementation of applicable Mitigation Measures, this impact would be reduced to a *less-than-significant* level. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.7-8: Implementation of the reduced on-campus housing alternative could result in development of facilities in the southeastern portion of the campus (adjacent to the southeastern hills) and could expose people or structures to a risk of loss, injury, or death involving wildland fires. However, implementation of applicable Mitigation Measures would reduce this risk to a *less-than-significant* level. As less development would occur under this alternative, this impact would be less than the proposed project.

Hydrology and Water Quality

Under Alternative 5, on-campus housing would be reduced, which could result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. With less development that would occur, hydrology and water quality impacts would generally be less than the proposed project.

Impact 4.8-1: Implementation of the reduced on-campus housing alternative would not violate existing water quality standards or waste discharge requirements. With continued adherence to NPDES permit conditions and other water quality control measures, as well as implementation of the relevant 2005 LRDP Planning Strategy and the existing Program and Practice, these impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.8-2: Implementation of the reduced on-campus housing alternative would not substantially deplete groundwater supplies or interfere with groundwater recharge. The campus is not identified as a significant groundwater recharge area. With continued implementation of relevant 2005 LRDP Planning Strategies and the existing Programs and Practices, this impact would be *less than significant*. As less development would occur under this alternative, potential demand on groundwater supplies would be reduced, and this impact would be less than the proposed project.

Impact 4.8-3: Implementation of the reduced on-campus housing alternative would not substantially alter drainage patterns on campus and would not result in substantial erosion or siltation on or off site. With implementation of relevant 2005 LRDP Planning Strategies and continued implementation of existing Programs and Practices related to site drainage and erosion control, impacts would be *less than significant*. As less development would occur under this alternative, the potential for changes in drainage patterns or soil erosion would be reduced, and this impact would be less than the proposed project.

Impact 4.8-4: Implementation of the reduced on-campus housing alternative would not substantially alter site drainage patterns or substantially increase the rate or amount of surface runoff and would not result in flooding either on or off site. With continued implementation of existing campus Programs and Practices related to site drainage, impacts would be *less than significant*. As less development would occur under this alternative, the potential for changes in drainage patterns or flooding would be reduced, and this impact would be less than the proposed project.

Impact 4.8-5: Implementation of the reduced on-campus housing alternative would not create runoff that would exceed the capacity of existing storm drain systems or provide substantial sources of polluted runoff. With continued implementation of campus Programs and Practices related to site drainage and storm drain improvements, impacts would be *less than significant*. As less development would occur under this alternative, the potential for runoff to exceed storm drain capacity would be reduced, and this impact would be less than the proposed project.

Impact 4.8-6: Implementation of the reduced on-campus housing alternative would require the construction of new stormwater drainage systems or the expansion of existing stormwater drainage systems; however, the construction or expansion of such systems would not result in significant impacts. With continued implementation of existing relevant campus Programs and Practices, impacts would be *less than significant*. As less development would occur under this alternative, the potential for major expansions of storm drain systems would be reduced, and this impact would be less than the proposed project.

Impact 4.8-7: Implementation of the reduced on-campus housing alternative would not otherwise substantially degrade water quality. With continued adherence to NPDES permit conditions and water quality control requirements, these impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.8-8: Implementation of the reduced on-campus housing alternative would not place housing within a 100-year flood hazard area, and *no impact* would occur. As the 2005 LRDP also does not propose to place housing within a 100-year flood hazard area, this impact would be comparable to the proposed project.

Impact 4.8-9: Implementation of the reduced on-campus housing alternative would not place structures within a 100-year flood hazard area. The campus plans to reduce the extent of the 100-year floodplain, which would reduce the potential for structures to be affected by a flood of this magnitude. If these improvements are not completed, then Mitigation Measures would be required to address impacts. Impacts would be less than significant and would be less than the proposed project, since less development would occur.

Impact 4.8-10: Implementation of the reduced on-campus housing alternative would alter site drainage patterns but would not expose people or structures to significant risk of loss, injury, or death involving flooding. With continued implementation of existing campus Programs and Practices related to site drainage, impacts would be *less than significant*. As less development would occur under this alternative,

the potential for changes in drainage patterns to result in flooding would be reduced and fewer people and structures would be exposed to this flooding hazard, and this impact would be less than the proposed project.

Impact 4.8-11: Implementation of the reduced on-campus housing alternative would not expose people or structures to a significant risk of loss, injury, or death involving inundation by seiche, tsunami, or mudflow. As the campus is located inland and is not in proximity to an open water body, no risk from seiche or tsunami would occur, similar to the proposed project. With implementation of relevant 2005 LRDP Planning Strategies and continued implementation of existing campus Programs and Practices related to protection from hazards such as mudflows, impacts would be *less than significant*. As less development would occur under this alternative, the potential for exposure to risk of mudflows would be reduced, and this impact would be less than the proposed project.

Land Use and Planning

Under Alternative 5, on-campus housing would be reduced, which could result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. With less development that would occur, land use impacts would generally be less than the proposed project.

Impact 4.9-1: Implementation of the reduced on-campus housing alternative would result in changes in on-campus land use that could be substantially incompatible with existing adjacent land uses. Due to the reduction in housing under this alternative, conflicts from housing adjacent to roadways or other uses would be reduced. Implementation of the applicable LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, would reduce potential impacts to a *less-than-significant* level. As less development would occur under Alternative 5, this impact would be less than the proposed project.

Impact 4.9-2: Implementation of the reduced on-campus housing alternative would not conflict with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the project. With implementation of the applicable LRDP Planning Strategies and continued implementation of existing campus Programs and Practices, impacts would be *less than significant*. Development would proceed in a manner similar to the proposed project, although less additional housing would be developed. This change would not affect project consistency with applicable plans, policies, and regulations. Impacts would be comparable to the proposed project.

Impact 4.9-3: Implementation of the reduced on-campus housing alternative would not conflict with any applicable habitat conservation plan or natural community conservation plan. Development would proceed in a manner similar to the proposed project, although less additional housing would be developed. This change would not affect project consistency with conservation plans. As the proposed Riverside County Multi-Species Habitat Conservation Plan does not designate any portion of the UCR campus as protected habitat, *no impact* would occur, comparable to the proposed project.

Noise

Under Alternative 5, future enrollment would reach 25,000 students; however, approximately 3,750 fewer students would reside in University housing, and approximately 1.0 million gsf less development would occur, compared to the proposed project. This would generally result in noise impacts that are less than the proposed project.

Impact 4.10-1: The reduced housing alternative would not expose new on-campus student residential uses to noise levels in excess of the State's 45 dBA CNEL interior noise standard. Implementation of the relevant LRDP Planning Strategies and existing Programs and Practices along with adherence to the applicable noise requirements would result in project design features in on-campus housing to reduce interior noise levels, and this impact would be *less than significant*. As less housing would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-2: Construction under the reduced housing alternative could generate and expose persons on campus to excessive groundborne vibration or groundborne noise levels. As is true for the proposed project, vibration levels could reach up to 87 VdB at the buildings located within 25 feet of construction. Even with the inclusion of identified Mitigation Measures, this impact would be *significant and unavoidable*. As less housing would be constructed under this alternative, this impact would be less than the proposed project.

Impact 4.10-3: Construction under the reduced housing alternative would not generate and expose persons off campus to excessive groundborne vibration or groundborne noise levels. As is true for the proposed project, the resulting groundborne vibration velocity levels from both construction activities and heavy trucks would be less than the Federal Railway Administration's 80 VdB vibration impact threshold for residences, and this impact would be *less than significant*. As less housing would be constructed under this alternative, this impact would be less than the proposed project.

Impact 4.10-4: Implementation of the reduced housing alternative would not generate and expose persons on or off campus to excessive operational groundborne vibration or groundborne noise levels. As is true for the proposed project, background operational vibration levels would be expected to average around 50 VdB when construction activities are not occurring, which is substantially less than the 65 VdB threshold for sensitive on-campus research buildings, 80 VdB at residences and student housing buildings, and 83 VdB at other institutional buildings. This impact would be *less than significant*, and would be less than the proposed project because less of development would occur under this alternative.

Impact 4.10-5: Implementation of the reduced housing alternative would generate increased local traffic volumes, but would not cause a substantial permanent increase in ambient noise levels at on- or off-campus locations. As student housing would be reduced under this alternative, the amount of vehicle trip generation by commuters would increase when compared with the proposed project, leading to more traffic volumes in the vicinity of the campus. With implementation of the existing Programs and Practices, this impact would be *less than significant*. As more traffic volumes would be generated under this alternative, this impact would be greater than the proposed project.

Impact 4.10-6: Implementation of the reduced housing alternative could add new stationary sources noise, but would not cause a substantial permanent on- or off-campus increase in ambient noise levels. With less housing on campus under this alternative, the overall amount of new stationary sources of noise on the campus, such as rooftop heating, ventilation, and air conditioning (HVAC) equipment, would also be reduced. With implementation of the relevant 2005 LRDP Planning Strategy and continued implementation of the existing Programs and Practice, this impact would be *less than significant*, and would be less than the proposed project.

Impact 4.10-7: Construction under the reduced housing alternative could result in temporary or periodic increases in ambient noise levels at on-campus locations. In general, the daily maximum amount of construction that could occur under the reduced housing alternative would be the same as the 2005 LRDP. However, because this alternative would result in approximately 1.0 million gsf less development than the proposed project, the duration of construction would be less. Depending on the location and type of development, construction noise levels could temporarily reach up to 83 dBA L_{eq}. Even with the inclusion of existing Programs and Practices, this impact would be *significant and unavoidable*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-8: The reduced housing alternative would result in construction that could result in substantial temporary or periodic increases in ambient noise levels at locations off campus. Construction noise would periodically increase noise levels by more than 10 dBA at selected off-campus locations, depending on the location and type of construction. Although the identified Mitigation Measures could reduce impacts, impacts would remain *significant and unavoidable*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.10-9: The reduced housing alternative could result in temporary or periodic increases in ambient noise levels due to special events. Under this alternative, special events, such as athletic and cultural events could occur and result in minor increases in noise levels. As the number of students attending the campus increases under this alternative, this could also increase the number of these special events. Although events could occur on more days per year, they would not result in substantial temporary or periodic increases in ambient noise levels. This impact would be *less than significant*. Although less development would occur, the provision of fewer on-campus residences would not affect the number and size of special events, and impacts would be similar to the proposed project.

Population and Housing

Under Alternative 5, on-campus housing would be reduced, which could result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. As a result, enrollment levels would remain the same; however, this alternative would increase the demand for housing off site, and impacts would generally be greater than the proposed project. In addition, without the construction of housing on campus, the housing demands resulting from additional students would be filled by private development.

Impact 4.11-1: Implementation of the reduced on-campus housing alternative would increase employment, and could directly induce substantial population growth in the area. Under this alternative, student enrollment would generally double, resulting in a comparable increase in faculty and staff, which would directly induce growth in the surrounding area. The total change in population would be similar to the proposed project, and, like the proposed project, would not exceed the growth already provided in the City's existing General Plan. However, this alternative would result in population or housing effects that could lead to a significant impact on the environment due to increased housing demands. Thus, implementation of Alternative 5 would induce substantial population growth within the City of Riverside, either directly or indirectly, and this impact would be *significant and unavoidable*, greater than the proposed project.

Impact 4.11-2: Implementation of the reduced on-campus housing alternative would result in an increased demand for housing off campus. Population growth on campus would remain the same as the proposed LRDP with a total enrollment level of 25,000 students. However, this alternative would provide on campus housing for 35 percent of the students, rather than 50 percent under the proposed project. Thus, approximately 3,750 fewer beds would be provided on campus. Assuming that the total demand for housing in the City remains constant, the increase in enrollment and campus population under Alternative 5 would increase demand for housing in the City, and in the County and region to a lesser extent. This alternative would thus place more demand for housing located off campus (than the proposed project, which would result in substantially more on-campus housing), with about double the number of students residing off campus compared to existing conditions. Increased demands for off-campus housing would place additional pressure on rental markets, potentially increasing rent costs. Due to higher market demands, persons otherwise inclined to reside in the City may be required to seek housing elsewhere in markets with less demands. Due to increased demand on housing within the City, impacts would be more severe than the proposed project, and would be *significant and unavoidable*, and greater than the proposed project.

Impact 4.11-3: Implementation of the reduced on-campus housing alternative would not displace existing on-campus residents but would create additional demand for housing. Similar to the proposed project, Alternative 5 would redevelop the existing Canyon Crest Family Student Housing complex, and demolish existing units as new family units were developed. Thus, with implementation of the relevant 2005 LRDP Planning Strategy, no existing residents would be displaced, and this impact would be *less than significant*. However, as fewer housing units would be located on-campus, Alternative 5 would increase demand for housing with the City, and this impact would be greater than the proposed project.

Impact 4.11-4: Implementation of the reduced on-campus housing alternative would not displace substantial numbers of people that would necessitate the construction of replacement housing elsewhere. Similar to the proposed project Alternative 5 would redevelop the existing Canyon Crest Family Student Housing complex, and demolish existing units as new family units were developed. Thus, a substantial number of people would not be displaced, and this impact would be *less than significant*. However, as on-campus housing would be reduced, Alternative 5 could necessitate the construction of replacement housing elsewhere off campus, and this impact would be greater than the proposed project.

Public Services

Under Alternative 5, on-campus housing would be reduced, which could result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. Although less development would occur under this alternative, enrollment levels would remain the same as the proposed project, and impacts to public services would generally be comparable to or less than the proposed project.

Impact 4.12-1: Implementation of the reduced on-campus housing alternative would not result in significant environmental effects associated with the provision of new or physically altered fire protection facilities to maintain acceptable response times and fire flows. The additional 6.10 million gsf of development that would occur under Alternative 5 would increase the demand for fire protection services; however, continued compliance with applicable fire safety and building design requirements would reduce potential impacts. Development would occur entirely within campus boundaries, and thus would not result in any increase in the distance between the existing Riverside City fire stations and the campus. Assuming that City of Riverside maintains and staff the existing fire stations near the campus, future on-campus development would continue to be served with a five-minute response time by the RFD and no increase in service response time is anticipated. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.12-2: Implementation of the reduced on-campus housing alternative would not result in significant environmental impacts associated with the provision of new or altered police protection facilities to maintain applicable service levels. The UCR Police Department may need to purchase additional equipment and hire additional personnel, which could require modification of the existing UCR police department station. However, minor expansion of the existing on-campus UCRPD facilities is unlikely to result in significant impacts. With implementation of the relevant 2003 Planning Strategy and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.12-3: Implementation of the reduced on-campus housing alternative would increase the number of school-age children in local school districts, including the Riverside Unified School District, although the increased number of students would be below the planned increase in District capacity. Since enrollment levels would remain the same as under the proposed project, the amount of school-age children projected for Alternative 5 would be similar to the amount projected for the proposed project, and impacts would be *less than significant*, comparable to the proposed project.

Impact 4.12-4: Implementation of the reduced on-campus housing alternative would not result in significant environmental impacts associated with the provision of new or altered library facilities to meet demand for library services. The increase in faculty, staff, and commuter students under this alternative would increase the demand for City and County library services. However, since the amount of faculty,

staff, and students would be the same as the proposed project, the impact associated with additional demands for library services would also be the same. This impact would be comparable in magnitude to the proposed project, and would be *less than significant*.

Recreation

Under Alternative 5, on-campus housing would be reduced, which could result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. With less housing development that would occur, recreation impacts would generally be the same as the proposed project.

Impact 4.13-1: Implementation of the reduced on-campus housing alternative would increase the off-campus population and could result in additional demand for recreational space off campus. Alternative 5 would provide for development of on-campus recreational facilities, similar to the proposed project, but could increase demand for additional recreational facilities within the City, as more students would live off-campus. However, since all students would continue to have access to on-campus recreational facilities. With implementation of the relevant 2005 LRDP Planning Strategies, this impact would be *less than significant,* and comparable to the proposed project.

Impact 4.13-2: Implementation of the reduced on-campus housing alternative would include recreational facilities that may have an adverse physical effect on the environment. Alternative 5 would provide for development of on-campus recreational facilities in a manner similar to the proposed project. Although recreational areas associated with new on-campus housing would be limited, due to the limited increase in on-campus housing, other areas including new playing fields would be developed. Development of on-campus recreational facilities would not result in impacts beyond those identified for the specific resources analyzed. Thus this impact would be *less than significant*, comparable to the proposed project.

Impact 4.13-3: Implementation of the reduced on-campus housing alternative could result in the conversion of existing recreational fields to non-recreational uses. Under Alternative 5, new recreational space or facilities would be developed to replace existing recreational facilities that would be removed by other development. Thus, with implementation of relevant 2005 LRDP Planning Strategies, this impact would be *less than significant*, comparable to the proposed project.

Transportation/Traffic

Under Alternative 5, future enrollment would reach 25,000 students; however, approximately 3,750 fewer students would reside in University housing, and approximately 1.0 million gsf less of development would occur, compared to the proposed project. This would result in traffic impacts that are both greater and less than the proposed project.

Impact 4.14-1: Implementation of the Reduced On-Campus Alternative would result in additional vehicular trips to the campus, which would increase traffic volumes and degrade intersection levels of service. Current student enrollment would increase by approximately 12,297 students over existing

conditions. An increase in UCR faculty and staff of approximately 4,174 faculty and staff would occur, in proportion with the student increase. Assuming the goal under this alternative of providing on campus housing for 35 percent of the students would be attained, an additional 4,603 beds of housing would be provided. The number of beds for family student housing, residence halls, and on-campus apartments was determined for this alternative by assuming that the proportion of each of these housing types would be the same as the proposed project. The number of student commuters would increase by approximately 3,750, the number of faculty and staff commuters would increase by 2,039, and the number of on-campus residents would increase by 4,603. Using current trip generation rates, the increase in trip generation can be estimated, as shown in Table 6-3. As the table shows, trip generation rates for individuals living on-campus are higher than trip generation rates for student commuters. Thus, while there would be more persons commuting long distances to the campus, the decrease in on-campus housing would reduce the total number of trips generated. However, this alternative would still result in additional vehicular trips, which would increase traffic volumes and degrade intersection levels of service. As housing would be provided for approximately 8,750 students under this alternative, the number of student commuters would increase by approximately 3,750 as compared with the proposed project. This increase in daily vehicle trips to the campus by students would increase traffic volumes and degrade intersection levels of service. The number of impacted intersections would decrease, although impacts would remain *significant and unavoidable*. With fewer trips generated under this alternative, this impact would be less than the proposed project.

Table 6-3 Estimated Net New Vehicle Trips, Alternative 5 (Reduced On-Campus Housing)

New Increase in Population	*Net New Persons*	*Daily Trip Rate*[a]	
Commuters			
Faculty/Staff	2039	7.277	1739
Students	3750	1.108	4155
Family [b]	256	9.153	2343
Residence Halls [b]	1193	2.153	2569
On-Campus Apts. [b]	3154	4.004	12629
Total New Trips			***23,435***

Source: EIP Associates, 2004

[a] Current trip rates

[b] Proportion of housing types consistent with percentage of each housing type for proposed project (47% residence halls, 47% on-campus apts, 6% family)

Impact 4.14-2: Implementation of the Reduced On-Campus Alternative would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. In general, the daily maximum amount of construction that could occur under this alternative would be less than the 2005 LRDP, since less total construction would occur. As indicated in the project-specific analysis, construction-related vehicle trips could occasionally degrade traffic conditions at individual intersections. Even with the implementation of applicable

mitigation measures, impacts could remain *significant and unavoidable*. As less development would occur under this alternative, impacts would be less than the proposed project. Development on campus under this alternative would result in the generation of construction-related vehicle trips, which could temporarily impact traffic conditions along roadway segments and at individual intersections. As is true for the proposed project, even with continued implementation of the applicable campus Program and Practice that would require coordination of construction activities to avoid overlap of activities with heavy truck traffic, construction vehicle traffic under this alternative may still result in localized impacts because of the imprecise nature of construction schedules, and the need to accommodate the anticipated enrollment increases and program growth identified in the 2005 LRDP. Thus, this impact would be *significant and unavoidable*. With approximately 1 million gsf less future on-campus development than the proposed project, impacts under this alternative would be less than the proposed project.

Impact 4.14-3: The Reduced On-Campus Housing Alternative would result in additional vehicular traffic volumes, which may exceed established service levels on roadways designated by the Riverside County Congestion Management Program. As discussed above, this alternative would result in an increase in campus-related trip generation of approximately 23,435 daily vehicle trips. Although this increase would be less than the increase under the 2005 LRDP (of approximately 53,582 daily trips, including a reduction from expansion of TDM programs), this increase would degrade traffic conditions on segments of the I-215/SR-60 freeway near the campus, and impacts would be *significant and unavoidable*, despite planned and programmed improvements to freeway capacity. As less development would occur under this alternative, this impact would be less than the proposed project. The reduced housing alternative would result in additional vehicular traffic volumes, which would exceed established service levels on roadways designated by the Riverside County Congestion Management Program. As such, this impact would be *significant and unavoidable.* Although there would be more student commuters, the largest trip generators are from students residing on campus. With a reduction in on-campus housing, impacts under this alternative would be less than the proposed project.

Impact 4.14-4: The Reduced On-Campus Alternative would not result in hazards due to design features or land use incompatibilities. It is anticipated that any new roadway segments 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, and thus impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-5: The Reduced On-Campus Alternative could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments. Construction activities could result in temporary closure of traffic lanes or roadway segments to permit the delivery of construction materials or to provide adequate site access. With continued implementation of existing campus Programs and Practices (such as flagpersons, or alternative routes) impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project. Construction under this

alternative could result in short-term vehicular hazards due to closure of traffic lanes or roadway segments.

Impact 4.14-6: The Reduced On-Campus Alternative would not substantially increase pedestrian hazards due to closure of sidewalks or paths. With continued implementation of existing campus Programs and Practices (such as signage or alternative routes) impacts would be *less than significant*. As less development would occur under this alternative, this impact would be less than the proposed project.

Impact 4.14-7: The reduced housing alternative would not impair emergency access in the long-term. Although implementation of this alternative would generate additional vehicle trips compared to existing conditions, it is anticipated that emergency vehicles will be able to traverse the roadways and intersections that may potentially be impeded from the increase in traffic volume. As is true for the proposed project, emergency vehicles are also anticipated to traverse roadways in other major jurisdictions where traffic conditions are severely congested by generally requiring vehicles to move over in order for the emergency vehicles to pass through. On some limited occasions, because of extended congestion, emergency vehicles may be required to cross to opposing traffic lanes (e.g., to travel westbound in eastbound traffic lanes), use the median, or a bicycle lane, to get around congested road segments or intersections. With implementation of the relevant LRDP Planning Strategy, this impact would be less than significant. With less future on-campus development than the proposed project, the impact under this alternative would be less than the proposed project.

Impact 4.14-8: The Reduced On-Campus Alternative would result in construction activities that could impair emergency access during the short-term. Construction activities could potentially affect emergency response due to temporary construction barricades or other obstructions that could impede emergency access on campus. Continued implementation of existing campus Programs and Practices (e.g., to preserve a single traffic lane on campus roadways whenever feasible) would ensure that emergency access remains unimpeded and this impact would be *less than significant*.

Impact 4.14-9: The Reduced On-Campus Alternative would result in inadequate parking capacity. This impact would be greater than the proposed project. Development under this alternative would not result in inadequate parking capacity. The parking inventory would be the same as the proposed project, although more commuters to the campus would result since fewer on-campus residences would be provided. As housing would be provided for approximately 8,750 students under this alternative, the number of student commuters would increase by approximately 3,750 as compared with the proposed project. This increase in daily vehicle trips to the campus by students would further increase the demand for parking in areas adjacent to the campus. Implementation of the relevant 2005 LRDP Planning Strategies and existing campus Programs and Practices would reduce impacts. However, the substantial increase in parking demands without provision of supply would result in *significant and unavoidable impacts*, which would be greater than the proposed project.

Impact 4.14-10: Development under this alternative would increase demand for parking in areas adjacent to the campus. As housing would be provided for approximately 8,750 students under this

alternative, the number of student commuters would increase by approximately 3,750 as compared with the proposed project. This increase in daily vehicle trips to the campus by students would further increase the demand for parking in areas adjacent to the campus. With implementation of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level. With more student commuters under this alternative, this impact would be greater than the proposed project.

Impact 4.14-11: Construction of new facilities under this alternative could result in temporary elimination of on-campus parking spaces and could require additional temporary parking for construction workers. In general, the daily maximum amount of construction that could occur under this alternative would be less than the 2005 LRDP due to the reduced development that would occur. However, because the 2005 LRDP would result in approximately 1.0 million gsf of additional development on the UCR campus in comparison to this alternative, the duration of construction would be greater. Under this alternative, construction of new structures on-campus could result in the elimination of parking spaces in existing parking lots to provide sites for the new buildings, to provide access to a construction site, or space for the staging of construction materials. In addition, construction employees would contribute to parking demand. With inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level. With less future on-campus development than the proposed project, the amount of construction would be reduced and the impact would be less than the proposed project.

Impact 4.14-12: Development under this alternative would not conflict with applicable policies, plans, or programs supporting alternative transportation. However, this alternative would be less supportive of planning practices that would reduce long-distance vehicular trips on roadways, as more students would commute to the campus, instead of residing on campus. In addition, the availability of alternative transportation would depend on the location of where students reside off campus with respect to the transit and bicycle options available to them. With inclusion of the identified Planning Strategies and continued implementation of existing campus Programs and Practices, this impact would be *less than significant*. With an increase in student commuters under this reduced housing alternative, this impact would be greater than the proposed project.

Impact 4.14-13: Development under this alternative would increase demand for public transit, as the ultimate level of enrollment under this alternative would be the same as the proposed project. With inclusion of the identified Mitigation Measure, this impact would be reduced to a *less-than-significant* level. With an increase in student commuters under this reduced housing alternative, this impact would be greater than the proposed project, but still *less than significant*.

Utilities

Under Alternative 5, on-campus housing would be reduced to 35 percent students housed on campus, which could result in the development of fewer buildings. All other proposed (non-housing) development would remain the same as the proposed LRDP. With less development that would occur, utility and service system impacts would generally be less than the proposed project.

Impact 4.15-1: Implementation of the reduced on-campus housing alternative would not require the construction of new or expanded water treatment facilities. Future on-campus development would be approximately 1 million gsf less than the proposed project, however, future enrollment would remain the same at 25,000 students. Demand for water and water treatment would be less on-campus with fewer residential units. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, impacts would remain *less than significant*, and would be less than the proposed project.

Impact 4.15-2: Implementation of the reduced on-campus housing alternative 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. Future on-campus development would be approximately 1 million gsf less than the proposed project, however, future enrollment would remain the same at 25,000 students. Demand for water would be less on-campus with fewer residential units. With implementation of the relevant 2005 LRDP Planning Strategy and the existing Programs and Practices, impacts would remain *less than significant,* and would be less than the proposed project.

Impact 4.15-3: Implementation of the reduced on-campus housing alternative would generate solid waste that would not require the expansion of the permitted capacity of a regional landfill. With a reduced number of students living on campus, future solid waste generation would be less than the proposed project, and would be *less than significant*.

Impact 4.15-4: Implementation of the reduced on-campus housing alternative would comply with all applicable federal, State, and local statutes and regulations related to solid waste. With implementation of Alternative 5, existing campus Programs and Practices related to solid waste would continue, and this impact would be *less than significant*, comparable to the proposed project.

Impact 4.15-5: Implementation of the reduced on-campus housing alternative would not exceed wastewater treatment requirements of the Regional Water Quality Control Board. Future on-campus development would be approximately 1 million gsf less than the proposed project, however, future enrollment would remain the same at 25,000 students. Wastewater discharge associated with on-campus development would be less than the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy and continued implementation of existing Programs and Practices, wastewater treatment requirements would not be exceeded and this impact would be *less than significant*.

Impact 4.15-6: Implementation of the reduced on-campus housing alternative could require the construction of new or expanded wastewater conveyance and treatment systems. As noted in the project-specific analysis, although less than the proposed project, increased discharge of wastewater could exceed the capacity of near-campus sewer trunk lines, and this situation would exist with implementation of Alternative 5. However, the magnitude of the effect may not be as great due to the reduced number of persons living on campus. With implementation of applicable Mitigation Measures, this impact would be reduced to a *less-than-significant* level and would be less than the proposed project.

Impact 4.15-7: Implementation of the reduced on-campus housing alternative would not increase wastewater generation such that treatment facilities would be inadequate to serve the project and the provider's existing commitments. With future development of approximately 1 million gsf less than the proposed project, wastewater discharge associated with on-campus development would be less than the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy, wastewater treatment capacity would not be exceeded and this impact would be *less than significant* and would be less than the proposed project.

Impact 4.15-8: Implementation of the reduced on-campus housing alternative could increase the demand for electricity, but would not require or result in the construction of new energy production or transmission facilities, the construction of which could cause a significant environmental impact. With future development of approximately 1 million gsf less than the proposed project, electrical demand associated with on-campus development would be less than the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant* and would be less than the proposed project.

Impact 4.15-9: Implementation of the reduced on-campus housing alternative could increase the demand for natural gas, but would not require or result in the construction of new gas production or transmission facilities. With future development of approximately 1 million gsf less than the proposed project, natural gas demand associated with on-campus development would be less than the proposed project. With implementation of the relevant 2005 LRDP Planning Strategy, this impact would be *less than significant*, less than the proposed project.

Impact 4.15-10: Implementation of the reduced on-campus housing alternative would not result in the wasteful, inefficient, or unnecessary use of energy by UCR. Under this alternative, more energy would be consumed off-campus due to the reduction in on-campus housing facilities. With implementation of the applicable LRDP Planning Strategy and continued adherence to Title 24 of the California Code of Regulations, this impact would be *less than significant*, comparable to the proposed project.

Relationship to Project Objectives

Alternative 5 would not allow for full development envisioned under the project and it would not meet the 2005 LRDP objectives of developing 7.1 million gsf of new development. In addition, the housing objectives of the 2003 UCR Strategic Plan for Housing would not be met with respect to the percentage of students housed in campus-owned or campus-controlled housing. The 2005 LRDP objective of pursuing a housing goal of 50 percent of student enrollment in campus-controlled housing would not be realized.

Comparison of Ability of Alternatives to Meet Project Objectives

A comparison of the ability of the five alternatives to meet the project objectives is provided in Table 6-4. As shown in the table, the project objectives are divided into three categories, which include academic, physical, and operational objectives (as discussed in Section 3.4 in Chapter 3 of this EIR). The

ability of each alternative to meet the project objectives is compared to the 2005 LRDP (e.g., "E" indicates that the ability to meet the project objectives is equal, or comparable, to the proposed project). Table 6-4 shows that none of the five alternatives would be able to fully meet the identified project objectives of the 2005 LRDP.

Table 6-4 Summary Comparison of Ability of Alternatives to Meet Project Objectives

Objectives	*Alternative 1 No New Development*	*Alternative 2 1990 LRDP*	*Alternative 3 West Campus Concentrated Development*	*Alternative 4 March Air Force Base Offsite*	*Alternative 5 Reduced On-Campus Housing*
Academic	L	L	E	L	E
Physical	L	L	L	L	L
Operational	L	L	E	E	E

L = Ability to meet objectives is less than the proposed project

E = Ability to meet objectives is equal, or comparable, to the proposed project

G = Ability to meet objectives is greater than the proposed project

Alternative 1, the No Project/No Development Alternative, would not meet the project objectives as it assumes that no additional development and growth in the campus population would occur. Alternative 2, which would result in the continuation of the existing 1990 LRDP, would not result in the scale of development on the UCR campus necessary to achieve the 2005 LRDP academic, physical, and operational objectives. Alternative 3, which would allow for full development envisioned under the project and meet both the academic and operational objectives of the 2005 LRDP, would not meet the physical objectives of reserving land at the western edge of the campus for future growth and continuing infill development on the East Campus. While Alternative 4 would allow for full development envisioned under the project, this alternative would not meet the physical objectives of infilling development of the East Campus, expanding to the West Campus, and renovation, restoration, and reconstruction of existing buildings, which can only be met by developing at the existing UCR campus. In addition, this alternative would not meet the academic objective of allowing for an increase in the size/critical mass of the on-campus community. As for Alternative 5, this alternative would not allow for full development envisioned under the project and thus would not meet the physical objectives of developing 7.1 million gsf of new development and providing housing for 50 percent of the student enrollment in on-campus or campus-controlled student housing.

Comparison of Effects of the Alternatives

A comparison of the effects of the five alternatives is provided in Table 6-5, below. This table compares the level of significance for impacts resulting from each project alternative, by issue area, to the impacts of the 2005 LRDP. Following Table 6-5, a summary is provided which describes the information contained in the table. For many resources, some impacts would be either greater to or less than the proposed project, while other impacts would be equal to the proposed project.

Table 6-5 Summary Comparison of Alternatives to the Proposed Project

Resource	Alternative 1 No New Development	Alternative 2 1990 LRDP	Alternative 3 West Campus Concentrated Development	Alternative 4 March Air Force Base Off Site	Alternative 5 Reduced On-Campus Housing
Aesthetics	L	L/E	L/E	E	L/E
Agricultural Resources	L	L/E	E/G	L/E	L/E
Air Quality	L	L	E/G	E/G	L/E/G
Biological Resources	L	L/E	L/E	L/E/G	L/E
Cultural Resources	L	L/E	L/E/G	L/E	L/E
Geology and Soils	L	L	E	E	L
Hazards and Hazardous Materials	L	L/E	L/E	L/E/G	L/E
Hydrology and Water Quality	L	L/E	E	L/E/G	L/E
Land Use	L	L/E	E/G	E/G	L/E
Noise	L	L	L/E	L/E/G	L/E/G
Population and Housing	L	L/E/G	E	E	G
Public Services	L	L	E	E/G	L/E
Recreation	L	L/E	L/E	E	E
Traffic and Transportation	L	L/E/G	E/G	L/E/G	L/G
Utilities	L	L/E	E/G	E	L/E

L = Impacts of Alternatives are less than the proposed project

E = Impact of Alternatives are equal to the proposed project

G = Impacts of Alternatives are greater than the proposed project

Note:

For each environmental resource, the level of significance for individual impacts under each project alternative may vary when compared to the proposed 2005 LRDP. For instance, some individual impacts under an environmental resource (e.g., aesthetics) may be greater than the 2005 LRDP while others are less than or comparable. On occasions where this occurs, all the varying significance levels are listed for each project alternative.

Comparison of Environmental Effects

Implementation of Alternative 1, the No Project/No Development Alternative, would reduce nearly all project impacts and result in no impacts, but would not achieve a majority of the project's objectives, because campus expansion of enrollment or development would not occur.

Alternative 2 would result in impacts that would be less than the proposed project for some thresholds in the following resource areas: aesthetics, agricultural resources, air quality, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use, noise, public services, recreation, and utilities and service systems. Some impacts to population and housing and transportation and traffic would be greater than the proposed project, and others would be less than the proposed project. Alternative 2 would also result in a new significant and unavoidable impact associated with the increased demand for housing. Impacts associated with additional vehicular trips, construction-related vehicle trips, and additional vehicular traffic volumes would be less than the proposed project, but would remain significant and unavoidable. In addition, two new significant and unavoidable impacts to traffic and transportation would occur with respect to inadequate parking

capacity and an increased demand for parking in areas adjacent to the campus. Although significant and unavoidable impacts would remain for agricultural resources, air quality, cultural resources, and noise, these impacts would be less than the proposed project.

Alternative 3 would result in impacts to aesthetics, biological resources, hazards and hazardous materials, noise, and recreation that would be less than the proposed project for some thresholds. Some impacts to agricultural resources, air quality, land use traffic, and utilities would be greater than the proposed project. This would include significant and unavoidable impacts associated with cultural resources and noise (groundborne vibration and temporary increases in ambient noise levels on campus) that would remain, although these would be less than the proposed project. Significant and unavoidable impacts would be comparable to the proposed project and would remain the same for air quality, noise (temporary increases in ambient noise levels off campus), and traffic. Impacts to agricultural resources would be greater than the proposed project. All other resource areas (geology and soils, hydrology and water quality, population and housing, and public services) with implementation of Alternative 3 would generally be comparable to the proposed project's level of significance.

With respect to Alternative 4, impacts associated with agricultural resources and cultural resources would be less than the proposed project. This alternative would not result in impacts associated with the loss of agricultural resources, thereby reducing a significant and unavoidable impact associated with the proposed project. Impacts associated with cultural resources would be less than the proposed project, but would remain significant and unavoidable. Impacts associated with aesthetics, geology and soils, population and housing, recreation, and utilities and service systems would be comparable to the proposed project. Impacts associated with air quality, land use, noise, public services, and traffic would generally be greater than the proposed project under this alternative. Significant and unavoidable impacts associated with air quality (generation of criteria pollutants), noise, and traffic would be comparable to the proposed project, and air quality (emissions generated by UCR) would be greater than the project. Some impacts to hazards and hazardous materials, biological resources, and hydrology and water quality would be greater than the proposed project, and others would be less than the proposed project. New significant and unavoidable impacts associated with air quality, biological resources, and land use would occur under implementation of this alternative.

Alternative 5 would result in reduced impacts for some thresholds on aesthetics, agricultural resources, biological resources, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use, public services, and utilities and services systems as compared to the proposed project. Impacts associated with recreation would be comparable, while impacts related to air quality, population and housing, and transportation and traffic would be greater than the proposed project. With respect to this alternative's ability to reduce significant and unavoidable impacts, impacts associated with agricultural resources, noise, and traffic (construction-related vehicle trips) would be less than the proposed project, but would remain significant and unavoidable. Significant and unavoidable impacts to cultural resources would be less than the proposed project. This alternative would result in a new significant and unavoidable impact associated with the increased demand for housing. Significant and

unavoidable impacts associated with traffic (additional vehicular trips and traffic volume) would be greater than the proposed project.

Identification of the Environmentally Superior Alternative

An EIR is required to identify the environmentally superior alternative from among the range of reasonable alternatives that are evaluated. This would ideally be the alternative that results in fewer (or no) significant and unavoidable impacts and meets all of the project objectives. CEQA Guidelines Section 15126.6(e)(2) states that if the environmentally superior alternative is the no project alternative, the EIR shall also identify an environmentally superior alternative from among the other alternatives.

While Alternative 1 would be considered the environmentally superior alternative because project impacts would be reduced and no additional impacts would occur, a majority of the project objectives would not be achieved. Of the other alternatives considered, none of them would reduce significant and unavoidable impacts to less-than-significant levels, or would reduce significant and unavoidable impacts to a substantial degree less than the proposed project. Alternative 2 would reduce the severity of impacts to a number of resources, although it would also result in new significant and unavoidable impacts. Alternatives 3, 4, and 5 would increase the severity and/or number of significant and unavoidable impacts. Therefore, none of the identified alternatives would be environmentally superior.

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