



**UNIVERSITY OF CALIFORNIA, RIVERSIDE**  
**PLANT GROWTH ENVIRONMENTS FACILITY**  
**PROJECT NO. 950558**

**Final Initial Study/Mitigated Negative Declaration**  
**State Clearinghouse No. 2019029085**

**Lead Agency:**

University of California, Riverside  
Campus Planning – Planning, Design, and Construction  
1223 University Avenue, Suite 240  
Riverside, California 92521

Contact: Jaime Engbrecht  
CEQA@ucr.edu

**Prepared by:**

Albert A. Webb Associates  
3788 McCray Street  
Riverside, California 92506

April 2019

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## SECTION 1.0 INTRODUCTION

Pursuant to State law and University procedures for the implementation of the California Environmental Quality Act (CEQA), the potential environmental effects of the proposed University of California, Riverside (UCR) Plant Growth Environments Facility Project (project or proposed project) have been analyzed in a Draft Initial Study (State Clearinghouse [SCH] No. 2019029085) dated February 2019. The environmental analysis for the proposed project is tiered from the 2005 Long Range Development Plan (LRDP) EIR (SCH No. 2005041164), certified by the University of California Board of Regents (The Regents) in November 2005, as augmented, revised and supplemented by the 2005 LRDP Amendment 2 EIR (SCH No. 2010111034) certified by The Regents on November 28, 2011.

Based on the project-specific analysis presented in the Initial Study, it was determined that for each topical issue the project would have no impact or less than significant impact with the adoption of identified project-level mitigation measures (MMs) and incorporation of all relevant MMs and continuing adherence to adopted Planning Strategies (PSs) and Campus Programs and Practices (PPs) identified in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR. The project description includes and incorporates all relevant MMs PSs, and PPs identified in the Final EIRs to minimize the impacts of projects implementing the LRDP, and the Draft Initial Study identified a project-specific mitigation measure (MM CUL-1) to reduce potential project-specific environmental impacts related to archaeological resources to less than significant level.

The Draft Initial Study/Mitigated Negative Declaration (IS/MND) was released for a 30-day public review period that concluded on March 18, 2019. The IS/MND was provided to approximately 20 interested agencies and individuals (including tribal representatives), and 15 copies were sent to the Governor's Office and Planning and Research, State Clearinghouse and Planning Unit to distribute to state agencies; it was also made available on the UCR Capital Asset Strategies website and at the Planning, Design and Construction offices. Two letters were received during the public review period (South Coast Air Quality Management District [SCAQMD] and the City of Riverside) and one letter was received after the public review period (Governor's Office of Planning and Research, State Clearinghouse and Planning Unit).

This document is the Final IS/MND for the UCR Plant Growth Environments Facility Project. The document includes:

- The comment letter from SCAQMD and the University's response;
- The comment letter from City of Riverside and the University's response;
- The comment letter from Governor's Office of Planning and Research, State Clearinghouse and Planning Unit and the University's response;
- Mitigation Monitoring and Reporting Program; and
- Draft Initial Study/Mitigated Negative Declaration, February 2019 (included in Attachment A).

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## **SECTION 2.0 PUBLIC COMMENT LETTERS AND UNIVERSITY RESPONSES**

Pursuant to *CEQA Guidelines* Section 15088, the responses to comments presented in this section address specific, relevant comments on environmental issues raised in the submitted comment letters.

The comment letters followed by the University's responses to the SCAQMD, City of Riverside, and Governor's Office of Planning and Research, State Clearinghouse and Planning Unit are included in this section. The identifying information provided on the right margin of the comment letters correspond to the response to comments.

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**COMMENT LETTER A**
**South Coast  
Air Quality Management District**

 21865 Copley Drive, Diamond Bar, CA 91765-4178  
 (909) 396-2000 • www.aqmd.gov

SENT VIA E-MAIL AND USPS:

[CEQA@ucr.edu](mailto:CEQA@ucr.edu)

 Jaime Engbrecht, Senior Planner  
 University of California, Riverside  
 Campus Planning – Planning, Design, and Construction  
 1223 University Avenue, Suite 240  
 Riverside, CA 92507

February 20, 2019

**Mitigated Negative Declaration (MND) for the Proposed  
Plant Growth Environments Facility**

South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The following comments are meant as guidance for the Lead Agency and should be incorporated into the Final MND.

A-1

**SCAQMD Staff's Summary of Project Description**

The Lead Agency proposes to demolish 13,106 square feet of existing structures and construct a 38,000-square-foot structure with on-site stationary equipment on 1.25 acres (Proposed Project). Construction of the Proposed Project is expected to take approximately 13 months beginning in April 2019 with completion in May 2020<sup>1</sup>.

A-2

**SCAQMD Permits and Applicable Rules and Regulations**

Upon a review of the Notice of Intent MND, SCAQMD staff found that the Proposed Project would include on-site stationary equipment such as packaged air handlers, evaporative cooling and fan coil units, and an approximately 550 kilowatt/450 kVA diesel standby generator<sup>2</sup>. The Lead Agency should consult with SCAQMD's Engineering and Permitting staff to determine if operation of this equipment will require a permit from SCAQMD or if the equipment will need to be registered under the Portable Equipment Registration Program (PERP) through the California Air Resources Board (CARB)<sup>3</sup>, and any applicable SCAQMD rules and regulations that should be discussed to demonstrate compliance in the Final MND. If SCAQMD permits are required, the Lead Agency should specifically identify SCAQMD as a Responsible Agency for the Proposed Project in the Final MND. The assumptions in the air quality analysis in the CEQA document will be used as the basis for permit conditions and limits. The 2015 revised Office of Environmental Health Hazard Assessment (OEHHA) methodology is being used by SCAQMD for determining operational health impacts for permitting applications and also for all CEQA projects where SCAQMD is the Lead Agency. Should there be any questions on permits, please contact the SCAQMD's Engineering and Permitting staff at (909) 396-3385. For more general information on permits, please visit SCAQMD's webpage at: <http://www.aqmd.gov/home/permits>. For more information on the PERP Program, please contact CARB at (916) 324-5869 or visit CARB's webpage at: <https://ww2.arb.ca.gov/our-work/programs/portable-equipment-registration-program-perp>.

A-3

**Conclusion**

Pursuant to CEQA Guidelines Section 15074, prior to approving the Proposed Project, the Lead Agency shall consider the MND for adoption together with any comments received during the public review

A-4

<sup>1</sup> MND, Page 117.

<sup>2</sup> *Ibid.* Page 119. Notice of Intent to Adopt – Mitigated Negative Declaration.

<sup>3</sup> South Coast Air Quality Management District. *Portable Equipment Registration Program (PERP)*. Accessed at: <http://www.aqmd.gov/home/permits/equipment-registration/perp>.

Jaime Engbrecht

February 20, 2019

process. Please provide SCAQMD with written responses to all comments contained herein prior to the adoption of the Final MND. When responding to issues raised in the comments, response should provide sufficient details giving reasons why specific comments and suggestions are not accepted. There should be good faith, reasoned analysis in response. Conclusory statements unsupported by factual information do not facilitate the purpose and goal of CEQA on public disclosure and are not meaningful, informative, or useful to decision makers and the public who are interested in the Proposed Project.

SCAQMD staff is available to work with the Lead Agency to address any air quality questions that may arise from this comment letter. Please contact me at [lsun@aqmd.gov](mailto:lsun@aqmd.gov), should you have any questions.

Sincerely,

*Lijin Sun*

Lijin Sun, J.D.  
Program Supervisor, CEQA IGR  
Planning, Rule Development & Area Sources

LS  
RVC190219-02  
Control Number

↑  
A-4  
Cont.

## **Response to Comment Letter A – South Coast Air Quality Management District, February 20, 2019**

### Response to Comment A-1

The University appreciates the South Coast Air Quality Management District (SCAQMD) taking the time to review and comment on the Draft MND for the project.

### Response to Comment A-2

This comment provides a general description of the proposed project and estimated construction schedule. It should be clarified that construction of the proposed project is anticipated to begin in mid-2019 and be completed by summer of 2020.

### Response to Comment A-3

This comment recommends that the University contact SCAQMD's Engineering and Permitting staff to determine whether on-site stationary equipment will require SCAQMD permits. The proposed project's on-site stationary equipment includes an approximately 550 kilowatt/450 kVA SCAQMD-certified diesel emergency generator engine, two SCAQMD-certified boilers, each rated at 1,250,000 BTU per hour, and a stationary refrigeration system with full charge capacity that will not exceed 50 pounds of hydrofluorocarbon (HFC) refrigerant.

A SCAQMD permit pursuant to Rule 203 (Permit to Operate) to operate for the certified diesel emergency generator will be obtained through the Emergency Internal Combustion Engine (Emergency Electrical Generator) Registration Permit process. The UC Riverside campus has been exempted from SCAQMD Rule 1472 (Requirements for Facilities with Multiple Stationary Emergency Standby Diesel-Fueled Internal Combustion Engines) by demonstrated compliance with all requirements of SCAQMD Rule 1402 (Control of Toxic Air Contaminants from Existing Sources) including an approved Health Risk Assessment with inventory of the emissions from all diesel engines on campus. The two certified boilers will be registered pursuant to SCAQMD Rule 222 (Filing Requirements for Specific Emission Sources Not Requiring a Written Permit Pursuant to Regulation II) through the SCAQMD Rule 222 Filing Program, and will be installed, operated, and maintained pursuant to all applicable requirements of SCAQMD Rule 11462 (Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers and Process Heaters). This Response to Comment letter will be provided to SCAQMD prior to the approval of the project.

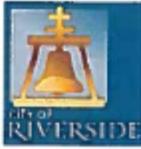
This comment also mentions to list SCAQMD as a Responsible Agency, if SCAQMD permits are required; however, it is not standard practice for UC Riverside to list an agency that issues a ministerial permit for a campus project, such as SCAQMD, as a Responsible Agency under CEQA; rather, the above noted SCAQMD permit requirements will be obtained prior to the installation of the equipment. The remaining rule requirements are operating requirements effective upon installation.. No changes to the IS/MND were made based on the above responses.

### Response to Comment A-4

The University will send a copy of the Response to Comment letter to SCAQMD prior to the approval of the proposed project. Please refer to Response to Comment A-3 for the applicable SCAQMD permit requirements for the on-site stationary sources.

The University of California Board of Regents (The Regents) or their designee has reviewed and considered the project design, Draft IS/MND, Mitigation Monitoring and Reporting Program (MMRP), Findings, Comment Letters, and Response to Comment Letters prepared for the project, and will consider the above mentioned documents prior to making a decision.

**COMMENT LETTER B**



Community Development  
Department  
Planning Division

*City of Arts & Innovation*

March 14, 2019

Jaime Engbrecht  
Senior Planner  
University of California, Riverside  
1223 University Avenue, Suite 240  
Riverside, CA 92507

**SUBJECT:** Notice of Intent (NOI) to Adopt a Mitigated Negative Declaration for the Plant Growth Environments Facility

Mr. Jaime Engbrecht,

Thank you for the opportunity to comment on the Mitigated Negative Declaration (MND) for the Plant Growth Environments Facility Project. The proposal is to construct a new Plant Growth Environments Facility on 1.25 acres within UC Riverside's East Complex. The site is located at the terminus of Eucalyptus Drive, at East Campus drive.

The City of Riverside (City) Planning Division distributed the NOI and MND to other City departments for their review. Based on information received, the City has no comments to provide at this time.

Should you have questions regarding this letter, please contact Jarrod Coleman, Associate Planner, at (951) 826-5617 or [JColeman@riversideca.gov](mailto:JColeman@riversideca.gov).

Sincerely,

Jay Eastman, AICP  
Principal Planner  
[jeastman@riversideca.gov](mailto:jeastman@riversideca.gov)  
951-826-5264

JE:jc

- c: Rusty Bailey, Mayor
- Riverside City Council Members
- Al Zelinka, City Manager
- Rafael Guzman, Assistant City Manager
- Moises Lopez, Deputy City Manager
- David Welch, Community & Economic Development Director
- Mary Kopaskie-Brown, City Planner

3900 Main Street, Riverside, CA 92522 | Phone: (951) 826-5371 | [RiversideCA.gov](http://RiversideCA.gov)

B-1

**Response to Comment Letter B – City of Riverside, March 14, 2019**

Response to Comment B-1

This comment generally describes the project, project location, and acknowledges that the City of Riverside (City) reviewed the Draft MND. The City has no comments on the project at this time. No environmental issues are raised in this comment. The University appreciates the City's review of the Draft IS/MND.

COMMENT LETTER C



Gavin Newsom  
Governor

STATE OF CALIFORNIA  
Governor's Office of Planning and Research  
State Clearinghouse and Planning Unit



Kate Gordon  
Director

March 19, 2019

Jaime Engbrecht  
University of California, Riverside  
1223 University Ave, Suite 240  
Riverside, CA 92521

Subject: Plant Growth Environments Facility  
SCH#: 2019029085

Dear Jaime Engbrecht:

The State Clearinghouse submitted the above named MND to selected state agencies for review. The review period closed on 3/18/2019, and no state agencies submitted comments by that date. This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act, please visit: <https://ceqanet.opr.ca.gov/2019029085> for full details about your project.

Please call the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process. If you have a question about the above-named project, please refer to the ten-digit State Clearinghouse number when contacting this office.

Sincerely,

Scott Morgan  
Director, State Clearinghouse

C-1

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044  
TEL 1-916-445-0613 state.clearinghouse@opr.ca.gov www.opr.ca.gov

**Response to Comment Letter C – Governor’s Office of Planning and Research, State Clearinghouse and Planning Unit, March 19, 2019**

Response to Comment C-1

The comment confirms that the Governor’s Office of Planning and Research, State Clearinghouse and Planning Unit received and distributed the Draft MND to selected state agencies for review and that no state agencies submitted comments by the close of the public review period. The comment also confirms that the University has complied with the Draft MND review requirement pursuant to CEQA for this project. No environmental issues are raised in this comment.

## **SECTION 3.0 MITIGATION MONITORING AND REPORTING PROGRAM**

### **3.1 INTRODUCTION**

The California Environmental Quality Act (CEQA) requires the adoption of feasible mitigation measures to reduce the severity and magnitude of potentially significant environmental impacts associated with project development. The Final Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed Plant Growth Environments Facility (proposed project or project) (State Clearinghouse No. 2019029085) analyzes the impacts of the proposed project, which includes all relevant mitigation measures (MMs), Planning Strategies (PSs), and Campus Programs and Practices (PPs) carried forward from the LRDP EIR. This Mitigation Monitoring and Reporting Program (MMRP), which identifies the LRDP EIR PSs, PPs and MMs included as part of the project description and one new project-specific mitigation measure related to archaeological resources, obligates the University to implement the identified PSs, PPs and MMs. The MMRP will be reviewed by the University of California Board of Regents (The Regents) or their designee, in conjunction with consideration for approval of the proposed project and adoption of the Final IS/MND.

Following adoption of the Final IS/MND and approval of this MMRP, the PSs, PPs and MMs from the LRDP EIR included as part of the project description would be monitored under the existing LRDP EIR Mitigation Monitoring and Reporting Program. In addition, UCR Campus Planning will coordinate monitoring the implementation of the additional project-specific mitigation measure. Monitoring will include: (1) verification that each mitigation measure has been implemented; (2) recording of the verification and any necessary notations regarding implementation of each mitigation measure; and (3) retention of records in the Plant Growth Environments Facility project mitigation monitoring file.

#### **Purpose**

The purpose of the MMRP is to ensure compliance with all PSs, PPs and MMs to avoid or reduce adverse environmental impacts resulting from construction and operation of the proposed project, which were identified in the IS/MND. The implementation of the applicable PSs, PPs and MMs shall be performed by the University, consultants, contractors, and appropriate agencies during the following:

- Development of the design
- Preparation of the construction contracts
- Construction phase
- Project operation

#### **Project Overview**

The proposed project is located at the eastern terminus of Eucalyptus Drive at East Campus Drive within UCR's East Campus Plant Growth Complex (East Complex). The proposed project would involve the demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet. Subsequent to demolition activities, the proposed project would include construction of a 2-story, approximately 38,000 gross square feet, approximately 33-foot high, cast-in-place concrete PGEF structure; and include on-site stationary equipment (packaged

air handlers, evaporative cooling and fan coil units, and standby generator); 20-foot wide fire access lane along the south portion of the site; new east-west crosswalks at the intersection of East Campus Drive at Eucalyptus Drive; an Americans with Disabilities (ADA) compliant pedestrian pathway; one accessible parking space; and associated landscape, hardscape, utility, and infrastructure improvements. The proposed project would comply with the UC Policy on Sustainable Practices (Sustainable Practices Policy).

### **Monitoring Procedures**

The Environmental Planning staff from Campus Planning will be responsible for coordinating the reporting of compliance with the measures listed in this MMRP, including:

- Coordination with the project manager (PM) and project inspector from the UCR Architects and Engineers office, who would be responsible for ensuring that design and construction contracts contain the relevant mitigation measures adopted in the Final IS/MND, and that mitigation measures are implemented during the design and construction phase of the project.
- Coordination and assistance to other Campus units and/or Departments with monitoring and report responsibilities to ensure that they understand their change and complete their reporting procedures accurately and on schedule, during construction and on-going project operations.

In general, monitoring will consist of demonstrating that mitigation measures were implemented and that the responsible units monitored the implementation of the measures. Monitoring will consist of determining whether the following occurred:

- Specific issues were considered in the design development phase
- Construction contracts included the specified provisions
- Certain actions occurred prior to construction
- The required measures were acknowledged and implemented during construction of the project

### **Reporting Procedures**

Monitoring of applicable LRDP PSs, PPs and MMs included as part of the project will be reported through the established LRDP EIR Mitigation Monitoring and Reporting Program process.

Monitoring and reporting of the project-specific mitigation measure will consist of responsible entities verifying that the relevant mitigation measure was implemented and documentation confirming compliance. UCR Campus Planning will coordinate and maintain the reporting records.

### **3.2 LIST OF PLANNING STRATEGIES, CAMPUS PROGRAMS AND PRACTICES, AND MITIGATION MEASURES**

Table 1 lists the PSs, PPs, and MMs from the certified LRDP EIR applicable to and included as part of the Plant Growth Environments Facility project description, the timing for these measures, and project specific mitigation as identified in the Final IS/MND. Detailed information regarding

the category, responsible UCR unit, monitoring triggers, and frequency for each PS, PP and MM is presented.

**TABLE 1  
MITIGATION MONITORING AND REPORTING PROGRAM**

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
<u>Monitoring Triggers</u> 1. Design stage 2. Construction documents (CDs) 3. Construction 4. Commencement of occupancy 5. Post-construction 6. On-going through Project operation		<u>UCR Responsible Entities</u> CAS – Capital Asset Strategies A&E – Architects & Engineers TAPS – Transportation and Parking Services E&HS – Environmental Health and Safety Sustainability – Sustainability Office				
<b>Aesthetics</b>						
Substantially degrade the existing visual character or quality of the site and its surrounding.	<u>Applicable LRDP EIR Planning Strategies:</u> <b>PS Development Strategy 1.</b> Establish a design review process to provide regular review of building and landscape development on campus.	A&E	1	Once to confirm review by Design Review Board		
	<u>Applicable LRDP EIR Programs and Practices:</u> <b>PP 4.1-1.</b> The Campus shall provide design professionals with the 2007 Campus Design Guidelines and instructions to implement the guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. <i>(This is identical to Land Use PP 4.9-1[a].)</i>	A&E	1	Once to confirm in relation to project design		
	<b>PP 4.1-2(a).</b> The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants,	CAS +/- A&E	1	Once to confirm in relation to project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	retention of existing trees, and use of water conserving plants, where feasible. <i>(This is identical to Land Use PP 4.9-1[b].)</i>					
	<b>PP 4.1-2(b).</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.	CAS +/-or A&E	1	Once to confirm inclusion in project design; Ongoing during construction, if required		
	<b><u>Applicable LRDP EIR Mitigation Measures:</u></b> <b>MM 4.1-3(a).</b> 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.	A&E	1, 2	Once to confirm inclusion in project design documents; Once to confirm inclusion in CDs		
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	<b><u>Applicable LRDP EIR Planning Strategies:</u></b> Refer to <b>PS Development Strategy 1</b> (above).					
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.1-1</b> (above).					
	<b><u>Applicable LRDP EIR Mitigation Measures:</u></b> Refer to <b>MM 4.1-3(a)</b> (above).					
<b>Air Quality</b>						
Violate any air quality standard or contribute substantially to an	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.3-1.</b> 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	TAPS	n/a	Ongoing verification through LRDP monitoring and		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
existing or projected air quality violation.	program may be subject to modification as new technologies are developed or alternate program elements are found to be more effective. <i>(This is identical to Transportation and Traffic PP 4.14-1.)</i> .			implementation		
	<p><b>PP 4.3-2(a).</b> Construction contract specifications shall include the following:</p> <ul style="list-style-type: none"> <li>(i) Compliance with all SCAQMD rules and regulations.</li> <li>(ii) Maintenance programs to assure vehicles remain in good operating condition.</li> <li>(iii) Avoid unnecessary idling of construction vehicles and equipment.</li> <li>(iv) Use of alternative fuel construction vehicles.</li> <li>(v) Provision of electrical power to the site, to eliminate the need for on-site generators.</li> </ul>	A&E	2	Once to confirm inclusion in CDs		
	<p><b>PP 4.3-2(b).</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:</p> <ul style="list-style-type: none"> <li>(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).</li> <li>(ii) Replace ground cover in disturbed areas as quickly as possible.</li> <li>(iii) Enclose, cover, water twice daily, or apply approved chemical soil binders to exposed piles with 5 percent or</li> </ul>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p>greater silt content.</p> <p>(iv) Water active grading sites at least twice daily.</p> <p>(v) Suspend all excavating and grading operations when wind speeds (as instantaneous gusts) exceed 25 miles per hour over a 30-minute period.</p> <p>(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.</p> <p>(vii) Sweep streets at the end of the day if visible soil material is carried over to adjacent roads</p> <p>(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.</p> <p>(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.</p> <p>(x) Post and enforce traffic speed limits of 15 miles per hour or less on all unpaved roads.</p> <p><i>(This is identical to Geology PP 4.6-2[a] and Hydrology PP 4.8-3[c].)</i></p>					
	<p><b><u>Applicable LRDP EIR Mitigation Measures:</u></b></p> <p><b>MM 4.3-1(a).</b> For each construction project on the campus, the project contractor will implement Programs and Practices 4.3-2(a) and 4.3-2(b). In addition, the following PM-10 and PM-2.5 control measure shall be implemented for each construction project:</p> <ul style="list-style-type: none"> <li>Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.</li> </ul>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p><b>MM 4.3-1(b).</b> For each construction project on the campus, the University shall require that the project include a construction emissions control plan that includes a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used for an aggregate of 40 or more hours during any portion of the construction project. During construction activity, the contractor shall utilize CARB certified equipment or better for all on-site construction equipment according to the following schedule:</p> <ul style="list-style-type: none"> <li>January 1, 2011 to December 31, 2011: All off-road diesel-powered construction equipment greater than 50hp shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.<sup>1</sup></li> <li>January 1, 2012 to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.<sup>2</sup></li> <li>Post January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition,</li> </ul>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		

<sup>1</sup> The timeframe for this component of MM 4.3-1(b) has passed and the more restrictive requirements defined are applicable.

<sup>2</sup> Although the time frame for this component has passed, the use of Tier 3 equipment is required where Tier 4 equipment is not available.

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p>all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.</p> <ul style="list-style-type: none"> <li>• A copy of each unit’s certified specification, BACT documentation and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit or equipment.</li> </ul> <p>Encourage construction contractors to apply for AQMD “SOON” funds. Incentives could be provided for those construction contractors who apply for AQMD “SOON” funds. The “SOON” program provides funds to accelerate clean-up of off-road diesel vehicles, such as heavy duty construction equipment. More information on this program can be found at the following website: <a href="http://www.aqmd.gov/tao/implementation/soonprogram.htm">http://www.aqmd.gov/tao/implementation/soonprogram.htm</a>.</p> <p>The contractor shall also implement the following measures during construction:</p> <ul style="list-style-type: none"> <li>• Prohibit vehicle and engine idling in excess of 5 minutes and ensure that all off-road equipment is compliant with the California Air Resources Board’s (CARB) in-use off-road diesel vehicle regulation and SCAQMD Rule 2449.</li> <li>• Configure construction parking to minimize traffic interference. Provide temporary traffic controls such as a flag person, during all phases of construction to maintain smooth traffic flow.</li> <li>• Provide dedicated turn lanes for movement of construction trucks and equipment on- and off site.</li> <li>• Schedule construction activities that affect traffic flow on the arterial system to off-peak hour to the extent practicable.</li> <li>• Improve traffic flow by signal synchronization, and ensure that all vehicles and equipment will be properly tuned and</li> </ul>					

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p>maintained according to manufacturers' specifications.</p> <ul style="list-style-type: none"> <li>• Use diesel-powered construction vehicles and equipment that operate on low-NOx fuel where possible.</li> <li>• Reroute construction trucks away from congested streets or sensitive receptor areas.</li> <li>• Maintain and tune all vehicles and equipment according to manufacturers' specifications.</li> </ul>					
	<p><b>MM 4.3-1(c).</b> For each construction project on the campus, the project contractor will implement Programs and Practices 4.3-2(a) and 4.3-2(b). In addition, the following PM-10 and PM-2.5 dust control measure shall be implemented for each construction project:</p> <p>Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The phone number of the District shall also be visible to ensure compliance.</p>	A&E	2	Once to confirm inclusion in CDs		
	<p><b>MM 4.3-2(b).</b> UCR shall continue to participate in greenhouse gas (GHG) reduction programs such as the American College and University Presidents' Climate Commitment (ACUPCC) and shall adhere to the UC Policy on Sustainable Practices. The measures adopted by UCR are presented in Tables 4.16-9 and 4.16-10 in Section 4.16 Greenhouse Gas Emissions of the 2005 LRDP Amendment 2 EIR. While these measures are typically targeted at GHG emissions, many act to reduce energy consumption and vehicle use on campus and would consequently also reduce air pollutant emissions from both area and mobile sources. In accordance with the ACUPCC and the UC Policy on Sustainable Practices and through implementation of its Climate Action Plan, UCR shall commit to reducing GHG emissions to 1990 levels by 2020, which would require significant reductions (on the order of 70 percent) from these sources in terms of GHG and therefore reductions in other air pollutants as well.</p>	CAS/A&E	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
<b>Biological Resources</b>						
Substantial adversely 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 U.S. Fish and Wildlife Service.	<p><b><u>Applicable LRDP EIR Planning Strategies:</u></b></p> <p><b>PS Conservation 3.</b> 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.</p>	CAS/A&E	1	Once to confirm inclusion in project design		
	<p><b><u>Applicable LRDP EIR Mitigation Measures:</u></b></p> <p><b>MM 4.4-4(a).</b> Prior to the onset of construction activities that would result in the removal of mature trees that would occur between March and mid-August, surveys 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.</p>	CAS/A&E	3	As needed, prior to start of construction		
	<p><b>MM 4.4-4(b).</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.</p>	CAS/A&E	3	As needed, prior to start of construction		
Substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of	<p><b><u>Applicable LRDP EIR Planning Strategies:</u></b></p> <p><b>PS Conservation 1.</b> 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.</p>	CAS/A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<p><b>PS Open Space 1.</b> 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.</p>	CAS/A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
Fish and Game or U.S. Fish and Wildlife Service.				construction		
	<b>PS Open Space 3.</b> 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.	CAS/A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.4-1(b).</b> To reduce disturbance of Natural and Naturalistic Open Space areas:</p> <ul style="list-style-type: none"> <li>(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.</li> <li>(ii) Removal of native shrub or brush shall be avoided, except where necessary.</li> <li>(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.</li> <li>(iv) Excess fill or construction waste shall be dumped in washes.</li> <li>(v) Vehicles or other equipment shall not be parked in washes or other drainages.</li> <li>(vi) Overwatering shall be avoided in washes and other drainages.</li> <li>(vii) Wildlife including species such as fox, coyote, snakes, etc. shall not be harassed. Harassment includes shooting, throwing rocks, etc.</li> </ul>	CAS/A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
Substantial adversely effect on federally protected wetlands as defined by Section 404 of the	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.4-2(b).</b> In compliance with NPDES, the campus would continue to implement Best Management Practices, as identified in the UCR Stormwater Management Plan (UCR 2003):</p> <ul style="list-style-type: none"> <li>(i) Public education and outreach on stormwater impacts</li> </ul>	A&E	2	Once to confirm inclusion in construction documents and SWPPP		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.	<ul style="list-style-type: none"> <li>(ii) Public involvement/participation</li> <li>(iii) Illicit discharge detection and elimination</li> <li>(iv) Pollution prevention/good housekeeping for facilities</li> <li>(v) Construction site stormwater runoff control</li> <li>(vi) Post-construction stormwater management in new development and redevelopment</li> </ul> <p><i>(This is identical to Geology and Soils PP 4.6-2(b) and Hydrology PP 4.8-3(d)).</i></p>					
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.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.1-2(a).</b> The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible. <i>(This is identical to Land Use PP 4.9-1[b].)</i></p>	CAS +/-or A&E	1	Once to confirm in relation to project design		
	<p><b>PP 4.1-2(b).</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.</p>	CAS +/-or A&E	1	Once to confirm inclusion in project design; Ongoing during construction, if required		
	<p><b><u>Applicable LRDP EIR Mitigation Measures:</u></b></p> <p>Refer to <b>MM 4.4-4(a)</b> (above).</p>					
	<p>Refer to <b>MM 4.4-4(b)</b> (above).</p>					
Conflict with any applicable policies protecting	<p><b><u>Applicable LRDP EIR Planning Strategies:</u></b></p> <p><b>PS Conservation 2.</b> Site buildings and plan site development to minimize site disturbance, reduction erosion and sedimentation, reduce stormwater runoff, and maintain existing landscapes,</p>	CAS	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
biological resources.	including healthy mature trees whenever possible.					
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.1-2(a)</b> (above).					
	Refer to <b>PP 4.1-2(b)</b> (above).					
	<b><u>Applicable LRDP EIR Mitigation Measures:</u></b> Refer to <b>MM 4.4-4(a)</b> (above).					
	Refer to <b>MM 4.4-4(b)</b> (above).					
<b>Cultural Resources</b>						
Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.5-2.</b> 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.	CAS	1	Once during preparation of environmental document		
	<b><u>Project-Level Mitigation Measures:</u></b> <b>MM 4.5-1(a).</b> 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.	CAS	1	Once during preparation of environmental document		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
<p>Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.</p>	<p><b><u>Project-Level Mitigation Measures:</u></b></p> <p><b>MM Cul-1.</b> If an archaeological resource is discovered during construction, all soil-disturbing work within 100 feet of the find shall cease and the University Representative shall contact a qualified Archaeologist meeting the Secretary of the Interior standards within 24 hours of discovery to inspect the site. If a resource within the project area of potential effect is determined to qualify as a unique archaeological resource (as defined by the California Environmental Quality Act [CEQA]), the University shall devote adequate time and funding to determine if it is feasible, through project design measures, to preserve the find intact. If it cannot be preserved, the University shall retain a qualified non-University Paleontologist/Archaeologist to design and implement a treatment plan, prepare a report, and salvage the material, as appropriate. Any important artifacts recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of findings that meets professional standards.</p> <ol style="list-style-type: none"> <li>a. If significant Native American cultural resources are discovered, as determined by the consulting Archaeologist for which a Treatment Plan must be prepared, the contractor or his Archaeologist shall immediately contact the University Representative. The University Representative shall contact the appropriate tribal representatives.</li> <li>b. If requested by tribal representatives, the University, the contractor, or his project Archaeologist shall, in good faith, consult on the discovery and its disposition (e.g., avoidance, preservation, return of artifacts to tribe).</li> <li>c. 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. The University shall immediately notify the Riverside County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5.</li> </ol>	CAS/A&E	2, 3	<p>Confirm inclusion in CDs; Ongoing verification during construction, as required</p>		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.5-4.</b> Construction specifications shall require that if a paleontological resource is uncovered during construction activities:</p> <ul style="list-style-type: none"> <li>(i) A qualified paleontologist shall determine the significance of the find.</li> <li>(ii) The Campus shall make an effort to preserve the find intact through feasible project design measures.</li> <li>(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.</li> <li>(iv) The paleontologist shall prepare a report of the results of the study, following accepted professional practice.</li> <li>(v) Copies of the report shall be submitted to the University and the Riverside County Museum</li> </ul>	ACAS/A&E	2, 3	Confirm inclusion in CDs; Ongoing verification during construction, as required		
Disturb any human remains, including those interred outside of formal cemeteries.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.5-5.</b> 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.</p>	CAS/A&E	2, 3	Confirm inclusion in CDs; Ongoing verification during ground disturbance phases, as required		
<b>Geology and Soils</b>						
Expose people or structures to potential substantial	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.6-1(b).</b> The Campus shall continue to implement its current seismic upgrade program.</p>	A&E	n/a	Ongoing verification through LRDP monitoring and		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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adverse effects, including the risk of loss, injury, or death involving: rupture of a known earthquake fault; seismic ground shaking; seismic-related ground failure; or landslides.				implementation		
	<b>PP 4.6-1(c).</b> 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, at a minimum, comply with seismic provisions of the California Code of Regulations, Title 24, California Administrative Code, the California State Building Code, or local seismic requirements, whichever requirements are most stringent.	A&E	2	Once to confirm inclusion in CDs		
Soil erosion or the loss of topsoil	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.6-2(a).</b> This is identical to Air Quality <b>PP 4.3-2(b).</b>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<b>PP 4.6-2(b).</b> This is identical to Biological Resources <b>PP 4.4-2(b).</b>	A&E	2	Once to confirm inclusion in CDs		
Located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.6-1(a).</b> 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: <ul style="list-style-type: none"> <li>• Determination of the locations of any suspected fault traces and anticipated ground acceleration at the building site.</li> <li>• Potential for displacement cause by seismically inducted shaking, fault/ground surface rupture, liquefaction, differential soil settlement, expansive and compressible</li> </ul>	A&E	1, 2	Once to confirm inclusion in project design; Once to confirm inclusion in CDs		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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	soils, landsliding, or other earth movements or soil constraints. <ul style="list-style-type: none"> <li>Evaluation of depth to groundwater.</li> </ul> The structure engineer shall incorporate the recommendations made by the geotechnical report when designing building foundations.					
<b>Greenhouse Gas Emissions</b>						
Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.	<u><b>Applicable LRDP EIR Planning Strategies:</b></u> <b>PS Campus and Community 4.</b> Provide strong connections within the campus and its edges to promote walking, bicycling, and transit use, rather than vehicular traffic.	CAS	1	Once to confirm inclusion in project design		
	<b>PS Conservation 5.</b> 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.	A&E	2	Once to confirm inclusion in construction documents		
	<b>PS Transportation 3.</b> Provide a continuous network of bicycle lanes and paths throughout campus, connecting to off-campus bicycle routes.	CAS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b>PS Transportation 5.</b> Provide bicycle parking at convenient locations.	A&E +/-or TAPS	1, 2	Once to confirm inclusion in project design; Once to confirm inclusion in CDs		
	<u><b>Applicable LRDP EIR Mitigation Measures:</b></u> <b>MM 4.3-2(b).</b> UCR shall continue to participate in greenhouse gas (GHG) reduction programs such as the American College and	CAS/A&E	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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	University Presidents' Climate Commitment (ACUPCC) and shall adhere to the UC Policy on Sustainable Practices. The measures adopted by UCR are presented in Tables 4.16-9 and 4.16-10 in Section 4.16 Greenhouse Gas Emissions of the 2005 LRDP Amendment 2 EIR. While these measures are typically targeted at GHG emissions, many act to reduce energy consumption and vehicle use on campus and would consequently also reduce air pollutant emissions from both area and mobile sources. In accordance with the ACUPCC and the UC Policy on Sustainable Practices and through implementation of its Climate Action Plan, UCR shall commit to reducing GHG emissions to 1990 levels by 2020, which would require significant reductions (on the order of 70 percent) from these sources in terms of GHG and therefore reductions in other air pollutants as well. <i>(This is identical to Air Quality MM 4.3-2(b)).</i>					
	<b>MM 4.14-1(b).</b> Travel Demand Management. To reduce on- and off-campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and Shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of campus TDM strategies through annual surveys. <i>(This is identical to Transportation and Traffic MM 4.14-1(b)).</i>	TAPS	n/a	Ongoing verification through LRDP monitoring and implementation		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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	<p><b>MM 4.14-1(d).</b> Sustainability and Monitoring. The University shall review individual projects proposed under the amended 2005 LRDP for consistency with UC sustainable transportation policy and UCR TDM strategies to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible. <i>(This is identical to Transportation and Traffic MM 4.14-1(d)).</i></p>	Sustainability/ TAPS	1	Once to confirm inclusion in project design		
	<p><b>MM 4.16-1.</b> All projects developed under the amended 2005 LRDP shall be evaluated for consistency with the GHG reduction policies of the UCR CAP and the UC Policy on Sustainable Practices, as may be updated from time to time by the University. GHG reduction measures, including, but not limited to, those found within the UCR CAP and UC Policy identified in Tables 4.16-9 and 4.16-10 shall be incorporated in all campus projects so that at a minimum an 8 percent reduction in emissions from BAU is achieved. It is expected that the GHG reduction measures in the UCR CAP will be refined from time to time, especially in light of the evolving regulations and as more information becomes available regarding the effectiveness of specific GHG reduction measures. As part of the implementation of the UCR CAP, the Campus will also monitor its progress in reducing GHG emissions to ensure it will attain the established targets.</p>	Sustainability	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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<b>Hazards and Hazardous Materials</b>						
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b>  <b>PP 4.3-2(c).</b> The Campus shall continue to implement SCAQMD Rule 1403-Asbestos when demolishing existing buildings on campus.</p>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during demolition phase of construction, as applicable		
	<p><b>PP 4.7-1.</b> 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.</p>	EH&S	n/a	Ongoing verification through LRDP monitoring and implementation		
	<p><b>PP 4.7-2.</b> The Campus shall perform hazardous materials surveys on buildings and soils, if applicable, prior to demolition and construction. When remediation is deemed necessary, surveys shall identify all potential hazardous materials within the structure to be demolished, and identify 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</p>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during demolition phase of construction, as applicable		
Create a significant hazard to the public or the environment	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b>  Refer to <b>PP 4.7-1</b> (above).</p>					

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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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.	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.7-1</b> (above).					
Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.7-7(a).</b> 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., flag persons), 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. <i>(This is identical to Transportation and Traffic PP 4.14-5).</i>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<b>PP 4.7-7(b).</b> To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, Architects & Engineers (formerly the Office of Design and Construction) shall consult with the UCPD, EH&S, and the RFD to	A&E	3	Ongoing verification during construction		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
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	disclose roadway closures and identify alternative travel routes. <i>(This is identical to Transportation and Traffic PP 4.14-8.)</i>					
	<b>PP 4.8-10.</b> In the event of an emergency, including catastrophic failure of the California State Water Project pipeline, the campus would implement the Emergency Operations Plan.	CAS/TAPS	3, 6	Ongoing through project construction and operation		
<b>Hydrology and Water Quality</b>						
Violate any water quality standards or waste discharge requirements.	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.8-1.</b> The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB. <i>(This is identical to Utilities PP 4.15-5.)</i>	A&E	2	Once to confirm inclusion in construction documents and SWPPP		
	<b>PP 4.8-3(d).</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  <i>(This is identical to Biological Resources PP 4.4-2[b] and Geology and Soils PP 4.6-2[b].)</i>	A&E	2	Once to confirm inclusion in construction documents and SWPPP		
Would the project otherwise	<b><u>Applicable LRDP EIR Programs and Practices:</u></b>					

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
substantially degrade water quality.	Refer to <b>PP 4.8-1</b> and <b>PP 4.8-3(d)</b> (above).					
Substantially deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.8-2(a).</b> To further reduce the campus’ impact on domestic water resources, to the extent feasible, UCR will:</p> <ul style="list-style-type: none"> <li>(i) Install hot water recirculation devices (to reduce water waste).</li> <li>(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).</li> <li>(iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time.</li> <li>(iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems.</li> <li>(v) Prohibit using water as a means of cleaning impervious surfaces.</li> <li>(vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time.</li> </ul> <p><i>(This is identical to Utilities PP 4.15-1[b].)</i></p>	A&E	1	Once to confirm inclusion in project design		
	<p><b>PP 4.8-2(b).</b> The Campus shall promptly detect and repair leaks in water and irrigation pipes. <i>(This is identical to Utilities PP 4.15-1[c].)</i></p>	Facilities Services	n/a	Ongoing verification through LRDP monitoring and implementation		
Substantially alter the existing drainage pattern	<p><b><u>Applicable LRDP EIR Planning Strategies:</u></b></p> <p><b>PS Conservation 2.</b> Site buildings and plan site development to minimize site disturbance, reduction erosion and sedimentation,</p>	CAS	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.	reduce stormwater runoff, and maintain existing landscapes, including healthy mature trees whenever possible.					
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.8-1</b> (above).					
	<b>PP 4.8-3(e)</b> . 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 of more of the following components of the storm drain system would be implemented to minimize the occurrence of local flooding:  <ul style="list-style-type: none"> <li>(i) Multi-project stormwater detention basins.</li> <li>(ii) Single-project detention basins.</li> <li>(iii) Surface detention basin.</li> <li>(iv) Expansion or modification of the existing storm drain system.</li> <li>(v) Installation of necessary outlet control facilities.</li> </ul>	A&E	1	Once to confirm inclusion in project design		
Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.	<b><u>Applicable LRDP EIR Planning Strategies:</u></b> Refer to <b>PS Conservation 2</b> (above).					
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.8-1</b> and <b>PP 4.8-3(e)</b> (above).					
Create or	<b><u>Applicable LRDP EIR Planning Strategies:</u></b>					

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Refer to <b>PS Conservation 2</b> (above).					
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.8-1</b> and <b>PP 4.8-3(e)</b> (above).					
<b>Land Use and Planning</b>						
Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the LRDP, general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	<b><u>Applicable LRDP EIR Planning Strategies:</u></b> <b>PS Land Use 1.</b> 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.	CAS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b>PS Land Use 2.</b> In order to achieve a compact and contiguous academic core and desired development densities, strategies will include infill sites in the developed East Campus academic core as well as expansion to the West Campus academic zone immediately adjacent to the I-215 and SR-60 freeway.	CAS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b>PS Transportation 3.</b> Provide a continuous network of bicycle lanes and paths throughout campus, connecting to off-campus bicycle routes.	CAS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b>PS Transportation 5.</b> Provide bicycle parking at convenient locations.	A&E +/-or TAPS	1, 2	Once to confirm inclusion in		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
				project design; Once to confirm inclusion in CDs		
	<b>PS Open Space 1.</b> 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.	CAS/A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<b>PS Open Space 3.</b> 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.	CAS/A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification		
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.9-1(a).</b> The Campus shall provide design architects with the 2007 Campus Design Guidelines and instructions to implement the Guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. <i>(This is identical to Aesthetics PP 4.1-1.)</i>	A&E	1	Once to confirm in relation to project design		
	<b>PP 4.9-1(b).</b> The Campus shall continue to provide design architects with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible. <i>(This is identical to Aesthetics PP 4.1-2[a].)</i>	A&E	1	Once to confirm in relation to project design		
	<b><u>Applicable LRDP EIR Mitigation Measures:</u></b> <b>MM 4.1-3(a).</b> 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.	A&E	1, 2	Once to confirm inclusion in project design documents; Once to confirm inclusion in CDs		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
<b>Noise</b>						
Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.10-1(a).</b> UCR will incorporate the following siting design measures to reduce long-term impacts:</p> <ul style="list-style-type: none"> <li>(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.</li> <li>(ii) Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.</li> <li>(iii) Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dBA during the daytime and 40 dBA during the nighttime (10 PM to 7 AM) in rooms facing major streets.</li> <li>(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.</li> </ul>	A&E	1	Once to confirm inclusion in project design		
	<p><b>PP 4.10-6.</b> 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.</p>	A&E	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
Exposure of persons to or of excessive groundborne vibration or groundborne noise levels.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.10-2.</b> The UCR Campus shall limit the hours of exterior construction activities from 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.</p>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<p><b>PP 4.10-7(a).</b> To the extent feasible, construction activities shall be limited to 7:00 AM to 9:00 PM Monday through Friday, 8:00 AM to 6:00 PM on Saturday, and no construction on Sunday and national holidays, as appropriate, in order to minimize disruption to area residences surrounding the campus and to on campus uses that are sensitive to noise.</p>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
	<p><b>PP 4.14-2.</b> 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</p>	A&E	3	Ongoing verification during construction		
	<p><b><u>Applicable LRDP EIR Mitigation Measures:</u></b></p> <p><b>MM 4.10-2.</b> 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.</p>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during construction		
Substantial temporary or periodic increase in ambient noise levels in the project vicinity	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p>Refer to <b>PP 4.10-2</b> and <b>PP 4.10-7(a)</b> (above).</p>					
	<p><b>PP 4.10-7(b).</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</p>	A&E	2	Once to confirm inclusion in CDs		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
above levels existing without the project (including construction).	equipment be fitted with appropriate noise mufflers.					
	<b>PP 4.10-7(c).</b> The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors.	A&E	2	Once to confirm inclusion in CDs		
	<b>PP 4.10-7(d).</b> 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.	A*E	2, 3	Once to communication prior to commencement of construction activities; Ongoing verification during construction		
Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	<b><u>Applicable LRDP EIR Planning Strategies:</u></b> <b>PS Campus and Community 4.</b> Provide strong connections within the campus and its edges to promote walking, bicycling, and transit use, rather than vehicular traffic.	CAS	1	Once to confirm inclusion in project design		
	<b>PS Transportation 3.</b> Provide a continuous network of bicycle lanes and paths throughout campus, connecting to off-campus bicycle routes.	CAS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.3-1.</b> 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. <i>(This is identical to Transportation and Traffic PP 4.14-1.)</i>	TAPS	n/a	Ongoing verification through LRDP monitoring and implementation		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.10-1(a)</b> and <b>PP 4.10-6</b> (above).</p>					
<b>Public Services</b>						
Fire Protection	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.12-1(a).</b> As development occurs, the following measures will be incorporated:</p> <ul style="list-style-type: none"> <li>(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.</li> <li>(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.</li> <li>(iii) Adequate access will be provided to within 50 feet of the main entrance of occupied buildings to accommodate emergency ambulance service.</li> <li>(iv) Adequate access for fire apparatus will be provided within 50 feet of stand pipes and sprinkler outlets.</li> <li>(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.</li> <li>(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.</li> </ul>	A&E	1	Once to confirm inclusion in project design		
	<p><b>PP 4.12-1(b).</b></p> <ul style="list-style-type: none"> <li>(i) Accident prevention features shall be reviewed and incorporated into new structures to minimize the need for</li> </ul>	A&E	1	(i) Once to confirm inclusion in project design; (ii) Ongoing		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p>emergency response from the City of Riverside.</p> <p>(ii) Increased staffing levels for local fire agencies shall be encouraged to meet needs generated by LRDP project related on-campus population increases.</p>	EH&S	n/a	verification through LRDP monitoring and implementation		
Police protection.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.12-2(a).</b> 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.</p>	UC Police Department	n/a	Ongoing verification through LRDP monitoring and implementation		
	<p><b>PP 4.12-2(b).</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.</p>	UC Police Department	n/a	Ongoing verification through LRDP monitoring and implementation		
<b>Transportation and Traffic</b>						
Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.14-2.</b> 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</p>	A&E	3	Ongoing verification during construction		
	<p><b>PP 4.14-5.</b> 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</p>	A&E	2, 3	Once to confirm inclusion in CDs; Ongoing verification during		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.	construction activities require the complete closure of a roadway segment, the Campus shall provide alternate routes and appropriate signage. <i>(This is identical to Hazards and Hazardous Materials PP 4.7-7[a].)</i>			construction		
Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.14-2</b> and <b>PP 4.14-5</b> (above).</p> <p><b>PP 4.14-6.</b> 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.</p>	A&E	3	Ongoing verification during construction		
Result in inadequate emergency access.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.14-8.</b> To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Architects and Engineers shall consult with the UCPD, EH&amp;S, and the RFD to disclose roadway closures and identify alternative travel routes. <i>(This is identical to Hazards and Hazardous Materials PP 4.7-7[b].)</i></p>	A&E	3	Ongoing verification during construction		
Conflict with adopted policies, plans, or	<p><b><u>Applicable LRDP EIR Planning Strategies:</u></b> <b>PS Campus and Community 4.</b> Provide strong connections within the campus and its edges to promote walking, bicycling, and transit</p>	CAS	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.	use, rather than vehicular traffic.					
	<b>PS Transportation 3.</b> Provide a continuous network of bicycle lanes and paths throughout campus, connecting to off-campus bicycle routes.	CAS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b>PS Transportation 5.</b> Provide bicycle parking at convenient locations.	A&E +/-or TAPS	1, 2	Once to confirm inclusion in project design; Once to confirm inclusion in CDs		
	<b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.14-1.</b> 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. <i>(This is identical to PP 4.3-1 in the Noise section.)</i>	TAPS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b><u>Applicable LRDP EIR Mitigation Measures:</u></b> <b>MM 4.14-1(b).</b> Travel Demand Management. To reduce on- and off-campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and Shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of campus TDM strategies through annual surveys.	TAPS	n/a	Ongoing verification through LRDP monitoring and implementation		
	<b>MM 4.14-1(d). Sustainability and Monitoring.</b> The University shall review individual projects proposed under the amended 2005 LRDP for consistency with UC sustainable transportation policy and UCR TDM strategies to ensure that bicycle and pedestrian	Sustainability/ TAPS	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible.					
<b>Tribal Cultural Resources</b>						
A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California American tribe	<p><b><u>Project-Level Mitigation Measures:</u></b></p> <p><b>MM Cul-1.</b> If an archaeological resource is discovered during construction, all soil-disturbing work within 100 feet of the find shall cease and the University Representative shall contact a qualified Archaeologist meeting the Secretary of the Interior standards within 24 hours of discovery to inspect the site. If a resource within the project area of potential effect is determined to qualify as a unique archaeological resource (as defined by the California Environmental Quality Act [CEQA]), the University shall devote adequate time and funding to determine if it is feasible, through project design measures, to preserve the find intact. If it cannot be preserved, the University shall retain a qualified non-University Paleontologist/Archaeologist to design and implement a treatment plan, prepare a report, and salvage the material, as appropriate. Any important artifacts recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of findings that meets professional standards.</p> <p>a. If significant Native American cultural resources are discovered, as determined by the consulting Archaeologist for which a Treatment Plan must be prepared, the contractor or his Archaeologist shall immediately contact the University Representative. The University Representative shall contact the appropriate tribal representatives.</p> <p>b. If requested by tribal representatives, the University, the contractor, or his project Archaeologist shall, in good faith, consult on the discovery and its disposition (e.g.,</p>	CAS/A&E	2, 3	Confirm inclusion in CDs; Ongoing verification during construction, as required		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<p>avoidance, preservation, return of artifacts to tribe).</p> <p>c. 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. The University shall immediately notify the Riverside County Coroner of the find and comply with the provisions of California Health and Safety Code Section 7050.5.</p>					
<b>Utilities and Service Systems</b>						
Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b></p> <p><b>PP 4.15-1(a).</b> 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.</p>	CAS	1	Once to confirm inclusion in project design and CEQA analysis		
	<p><b>PP 4.15-1(b).</b> To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will:</p> <ul style="list-style-type: none"> <li>(i) Install hot water recirculation devices (to reduce water waste).</li> <li>(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).</li> <li>(iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time.</li> </ul>	A&E	1	Once to confirm inclusion in project design		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
	<ul style="list-style-type: none"> <li>(iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems.</li> <li>(v) Prohibit using water as a means of cleaning impervious surfaces.</li> <li>(vi) Install water-efficient irrigation equipment to local evaporation rates to maximize water savings for landscaping and retrofit existing systems over time.</li> </ul> <p><i>(This is identical to Hydrology PP 4.8-2[a]).</i></p>					
	<p><b>PP 4.15-1(c).</b> The Campus shall promptly detect and repair leaks in water and irrigation pipes. <i>(This is identical to Hydrology PP 4.8-2[b]).</i></p>	Facilities Services	n/a	Ongoing verification through LRDP monitoring and implementation		
Sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b> Refer to <b>PP 4.15-1(a)</b>, <b>PP 4.15-1(b)</b>, and <b>PP 4.15-1(c)</b> (above).</p>					
Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's	<p><b><u>Applicable LRDP EIR Programs and Practices:</u></b> <b>PP 4.15-5.</b> The Campus will continue to comply with all applicable water quality requirements established by the SARWQCB. <i>(This is identical to Hydrology PP 4.8-1.)</i></p>	A&E	2	Once to confirm inclusion in construction documents and SWPPP		

Impact	Mitigation Measures	Responsible Entity	Monitoring Triggers	Frequency of Reporting	Verification of Compliance	
					Initial if Completed	Remarks
projected demand in addition to the provider's existing commitments.						

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**ATTACHMENT A**  
**PLANT GROWTH ENVIRONMENTS FACILITY**  
**DRAFT INITIAL STUDY/MITIGATED NEGATIVE DECLARATION**



**UNIVERSITY OF CALIFORNIA, RIVERSIDE**  
**PLANT GROWTH ENVIRONMENTS FACILITY**  
**PROJECT NO. 950558**

**Draft Initial Study/Mitigated Negative Declaration**

**Lead Agency:**

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February 2019

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## **APPENDICES**

### **APPENDIX**

- A** CalEEMod Calculation Models
- B** Biological Resources Technical Report
- C** Historic Building Assessment
- D** Cultural Resource Constraints Analysis
- E** Geotechnical Data Report

## ACRONYMS

### **Acronym**

### **Definition**

2005 LRDP	University of California, Riverside 2005 Long Range Development Plan
2005 LRDP Amendment 2	University of California, Riverside 2005 Long Range Development Plan Amendment 2
2005 LRDP Amendment 2 EIR	University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report
2005 LRDP EIR	University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report
AB 32	Assembly Bill 32
ACMs	Asbestos Containing Materials
ADA	Americans with Disabilities
AQMP	Air Quality Management Plan
BAU	Business As Usual
Bgs	Below Ground Surface
BMP	Best Management Practices
CaLEEMod	California Emissions Estimator Model
CalGreen	California Green Building Standards Code
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CARB	California Air Resources Board
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Fish and Wildlife
CEQA	California Environmental Quality Act
CES	Citrus Experiment Station
CF	Cubic Feet
CHRIS	California Historical Resource Information System
CNAS	College of Natural and Agricultural Sciences
CNEL	Community Noise Equivalent Level
CO	Carbon Monoxide
CRC-AES	Citrus Research Center and Agricultural Experiment Station

CRHR	California Register of Historic Resources
CWA	Clean Water Act
dBA	A-weighted decibels
DOC	California Department of Conservation
DPR	Department of Parks and Recreation
DTSC	Department of Substances Control
EH&S	Environmental Health and Safety
EIC	Eastern Information Center
EIR	Environmental Impact Report
EOP	Emergency Operations Plan
EPC	Environmental Performance Criteria
FEMA	Federal Emergency Management Agency
FMMP	Farmland Mapping and Monitoring Program
FTE	Full-Time Equivalent
GHG	Greenhouse Gas
Gsf	Gross Square Feet
HHRA	Human Health Risk Assessment
I-215	Interstate 215
ICEs	Internal Combustion Engines
IS	Initial Study
Labs21	Laboratories for the 21 <sup>st</sup> Century
LBP	Lead Based Paint
LED	Light Emitting Diode
LEED	Leadership in Energy and Environmental Design
Leq	Equivalent Noise Level
LID	Low Impact Development
LOS	Level of Service
LRDP	Long Range Development Plan
LRDP EIR	University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report and University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report
LST	Localized Significance Thresholds

LUST	Leaking Underground Storage Tank
MBTA	Migratory Bird Treaty Act
MEI	Maximally Exposed Individual
MGD	Million Gallons Per Day
MMs	Mitigation Measures
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration
MS4	Municipal Separate Storm Sewer System
MSHCP	Multiple Species Habitat Conservation Plan
MTCO <sub>2e</sub>	Metric Tons of CO <sub>2</sub> or Equivalent
MVA	Megavolt Amps
NAAQS	National Ambient Air Quality Standards
ND	Negative Declaration
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O <sub>3</sub>	Ozone
OHP	Office of Historic Preservation
PGEF	Plant Growth Environment Facility
PM-2.5	Particulate matter less than 2.5 microns in size
PM-10	Particulate matter less than 10 microns in size
Ppb	Parts Per Billion
PPs	Programs and Practices
PRC	Public Resources Code
PSs	Planning Strategies
PVC	Polyvinyl Chloride
RCDWR	Riverside County Department of Waste Resources
RPU	City of Riverside Public Utilities
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RUSD	Riverside Unified School District
RWQCB	Regional Water Quality Control Board

RWQCP	Regional Water Quality Control Plant
SAP	Sustainability Action Plan
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCH	State Clearinghouse
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SOM	School of Medicine
SR-60	State Route 60
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TACs	Toxic Air Contaminants
TDM	Transportation Demand Management
The Regents	Board of Regents
TPD	Tons Per Day
UC	University of California
UCPD	UC Police Department
UCR	University of California, Riverside
USACE	U.S. Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGBC	U.S. Green Building Council
USTs	Underground Storage Tanks
UWMP	Urban Water Management Plan
VOC	Volatile Organic Compound
WDR	Waste Discharge Requirements

**PLANT GROWTH ENVIRONMENTS FACILITY  
UNIVERSITY OF CALIFORNIA, RIVERSIDE**

**Project No. 950558**

**Initial Study and Environmental Checklist Form**

**I. PROJECT INFORMATION**

**1. PROJECT TITLE**

Plant Growth Environments Facility

**2. LEAD AGENCY NAME AND ADDRESS**

The Regents of the University of California  
1111 Franklin Street, 12<sup>th</sup> Floor  
Oakland, California 94607

**3. CONTACT PERSON AND PHONE NUMBER**

Jaime Engbrecht  
Planner  
Campus Planning - Planning, Design, and Construction  
University of California, Riverside  
1223 University Avenue, Suite 240  
Riverside, California 92521  
(951) 827-2421

**4. PROJECT LOCATION**

University of California, Riverside  
Riverside, California 92521  
(Refer to **Figure 1 – Regional and Location Vicinity Map** and **Figure 2 – UCR Campus Map**)

**5. PROJECT SPONSOR'S NAME AND ADDRESS**

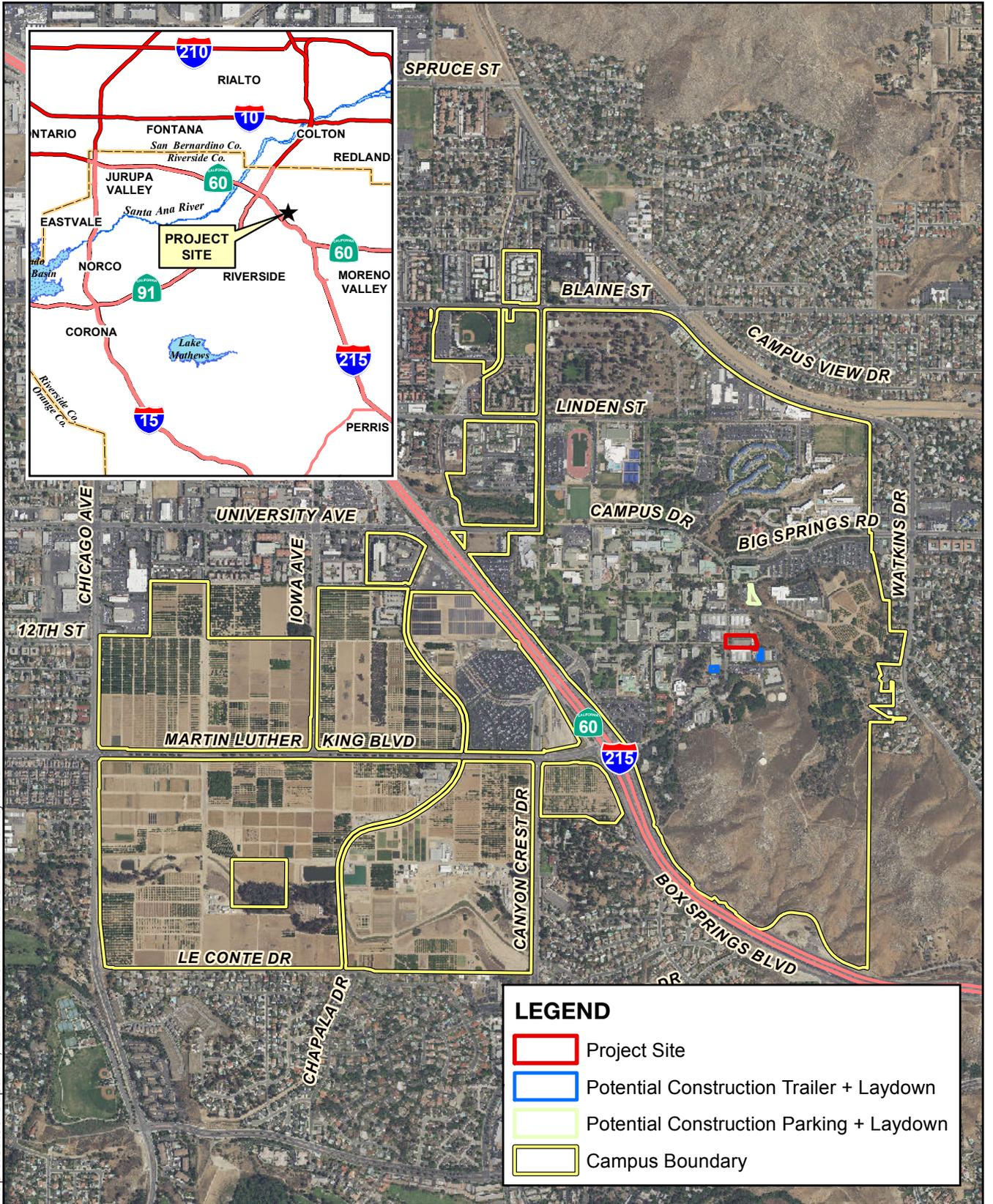
University of California, Riverside  
Planning, Design, and Construction  
1223 University Avenue, Suite 240  
Riverside, California 92521

**6. CUSTODIAN OF THE ADMINISTRATIVE RECORD FOR THIS PROJECT**

Same as listed under No. 3 above.

**7. IDENTIFICATION AND LOCATION OF ENVIRONMENTAL IMPACT REPORT(S) BEING RELIED ON FOR TIERING**

*University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report* (referred to hereinafter as the 2005 LRDP EIR) and the *University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report* (referred to hereinafter as the 2005 LRDP Amendment 2 EIR) (collectively referred to as the “LRDP EIR”). The documents are available for review at the University of California, Riverside (UCR) Office of Planning, Design, and Construction, at the address listed above in Section 3 and online at <http://lrpd.ucr.edu/>.



Map created Sept. 15, 2016. G:\2017\17-0385\GIS\Vicinity.mxd

Sources: UC Riverside, 2018; Riverside Co, GIS, 2018; USDA NAIP, 2016

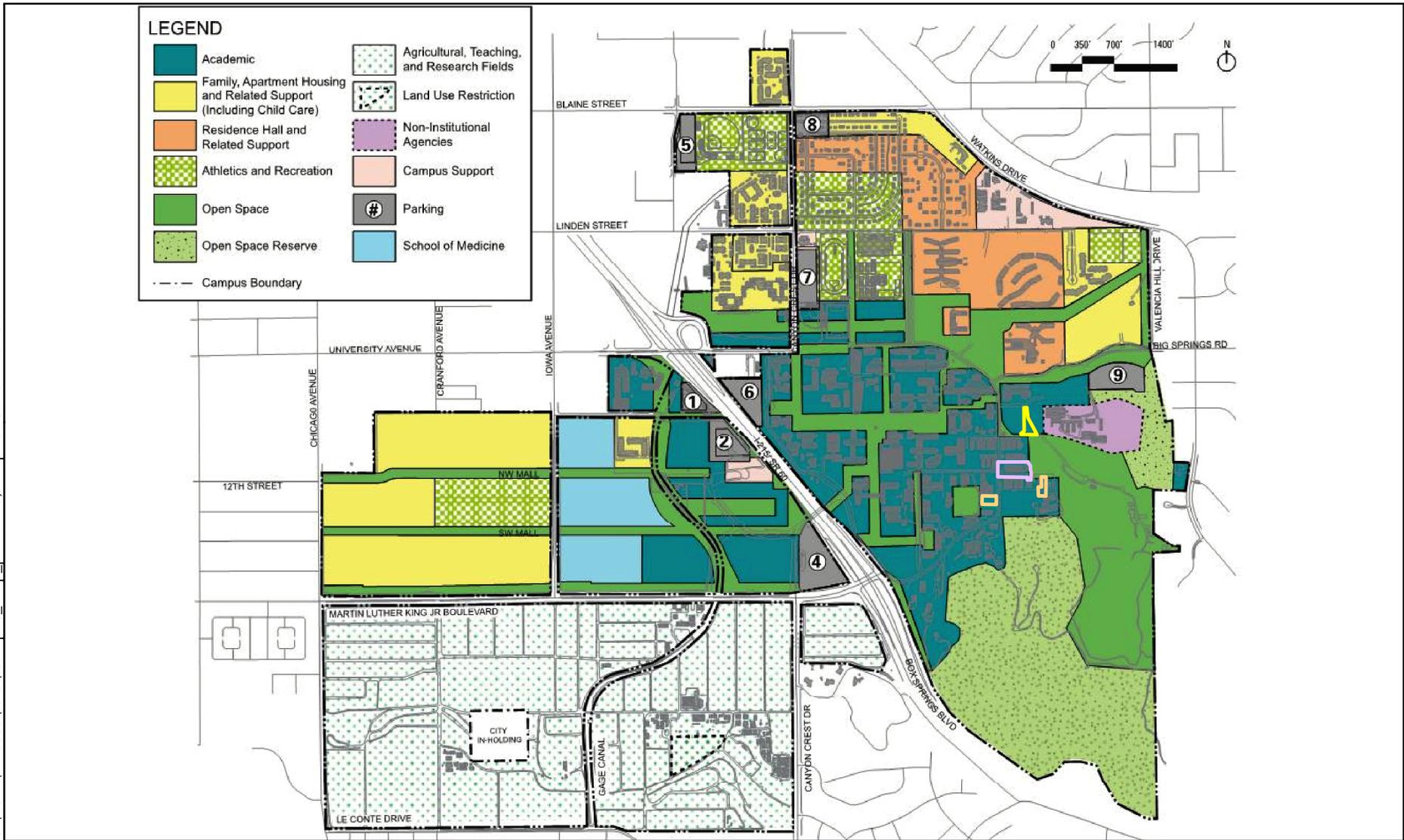
**Figure 1 – Regional and Location Vicinity Map**

UCR Plant Growth Environments Facility



0 1,000 2,000 3,000 Feet

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**Figure 2 - UCR Campus Map**  
UCR Plant Growth Environments Facility



**LEGEND**

- Project Site
- Potential Construction Trailer + Laydown
- Potential Construction Parking + Laydown



## **Introduction**

The environmental analysis for the proposed UCR Plant Growth Environments Facility Project (proposed project or PGEF project) is tiered from the 2005 LRDP EIR (State Clearinghouse [SCH] No. 2005041164), certified by the University of California (UC) Board of Regents (The Regents) in November 2005, as augmented, revised, and supplemented by the 2005 LRDP Amendment 2 EIR (SCH No. 2010111034) certified by The Regents on November 28, 2011. The 2005 LRDP Amendment 2 EIR is a supplement to the 2005 LRDP EIR and provides an analysis of only those environmental effects identified in the 2005 LRDP EIR that changed as a result of the 2005 LRDP Amendment 2, which includes a revision to the land use map to allow for the location of a new School of Medicine (SOM) as well as other land use map changes; additional building space to accommodate the increased square footage requirements for the SOM; and the extension of the LRDP horizon year (described further below). The 2005 LRDP Amendment 2 EIR also includes an analysis of greenhouse gas (GHG) emissions resulting from development under the 2005 LRDP, as amended. The 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR are Program EIRs and were prepared in accordance with the California Environmental Quality Act (CEQA) (*Public Resources Code* [PRC], Section 21000, et seq., specifically, Section 21094), the *State CEQA Guidelines* (Title 14, *California Code of Regulations* [CCR], Sections 15000 et seq.), and the *University of California Procedures for the Implementation of CEQA*.

Section 15152 of the *State CEQA Guidelines* states, “Tiering refers to using the analysis of general matters contained in a broader EIR (such as one prepared for a general plan or policy statement) with later EIRs and negative declarations (NDs) on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or ND solely on issues specific to the later project.” CEQA and the *State CEQA Guidelines* encourage the use of tiered environmental documents to eliminate repetitive discussions of the same issues. As stated in the 2005 LRDP Amendment 2 EIR, “As authorized by Section 15168(c) of the *State CEQA Guidelines*, projects implementing the 2005 LRDP as revised by Amendment 2 will be examined in light of the 2005 LRDP EIR and this supplemental EIR [the 2005 LRDP Amendment 2 EIR] to determine whether the potential environmental effects of the individual project were adequately addressed in these EIRs, and whether any additional mitigation measures are required.” Therefore, this Initial Study/Mitigated Negative Declaration (IS/MND) is hereby tiered from the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR, which was certified on November 28, 2011. The documents are available for review at the UCR Office of Planning, Design, and Construction, at the address listed above in Section I, and online at <http://lrpd.ucr.edu/>.

The 2005 LRDP EIR analyzes the direct, indirect, and cumulative projects resulting from the projected need for development of approximately 7.1 million gross square feet (gsf) of new academic, housing, and support space to accommodate a total enrollment of 25,000 students<sup>1</sup> by the academic year 2015/2016, for a total of 11.8 million gsf on the UCR campus with 2005 LRDP buildout. The 2005 LRDP Amendment 2 EIR analyzes the direct, indirect, and cumulative impacts resulting from revisions to the 2005 LRDP land use map and an increase in the maximum building space that could be built on the campus from 11.8 million gsf to 14.9 million gsf to accommodate

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

the SOM. The 2005 LRDP Amendment 2 does not change the projected enrollment level of 25,000 students but projects that this enrollment level will be attained in 2020/2021, five years later than projected in the 2005 LRDP. The 2005 LRDP Amendment 2 EIR addresses a total projected on-campus population associated with faculty, staff, and visitors of 16,393 persons (an increase of 5,852 persons associated with the SOM). Measures to mitigate the significant direct, indirect, and/or cumulative impacts identified for UCR's projected development are identified in both the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR.

Section 15152(f) of the *State CEQA Guidelines* instructs that when tiering, a later EIR or ND shall be prepared only when, on the basis of an IS, the later project may cause significant effects on the environment that were not adequately addressed in the prior EIR(s) or ND(s). Significant environmental effects are considered to have been "adequately addressed" if the lead agency determines that:

- (A) they have been mitigated or avoided as a result of the prior environmental impact report and findings adopted in connection with that prior environmental report; or
- (B) they have been examined at a sufficient level of detail in the prior environmental impact report to enable those effects to be mitigated or avoided by site specific revisions, the imposition of conditions, or by other means in connection with the approval of the later project.

Following review of the proposed project and the analysis presented in the 2005 LRDP EIR as supplemented and updated by the 2005 LRDP Amendment 2 EIR, it has been determined that the proposed project is a "project" under CEQA that was not fully addressed in the Program EIRs; therefore, additional environmental review is required. Accordingly, this tiered IS has been prepared on the basis that UCR has proposed to adopt an MND.

In conjunction with certification of the 2005 LRDP Amendment 2 EIR and approval of the 2005 LRDP Amendment 2, The Regents also adopted a Mitigation Monitoring and Reporting Program (MMRP). The MMRP ensures that the 2005 LRDP Planning Strategies (PSs), Campus Programs and Practices (PPs), and Mitigation Measures (MMs), as revised by the 2005 LRDP Amendment 2 EIR, that are the responsibility of the UC, are implemented in a timely manner. The MMs are monitored by the appropriate campus entity and are reported on an annual basis. As individual projects, such as the proposed project, are designed and constructed, the projects include features necessary to implement relevant PSs, PPs, and MMs. Therefore, in accordance with The Regents' November 2011 approval of the 2005 LRDP Amendment 2 and certification of the associated Final EIR, all relevant PSs, PPs, and MMs have been incorporated into the proposed project description and would be implemented as part of the proposed project and monitored through the approved MMRP. Relevant UCR PSs, PPs, and/or MMs are listed in the introduction to the analysis for each topical issue in Section V, Evaluation of Environmental Impacts which are included in the project MMRP. In addition to PSs, PPs, and MMs from the MMRP relevant to the proposed project, this IS/MND includes new project-specific mitigation measures identified to reduce project-specific environmental impacts to a less than significant level (specifically related to archaeological resources).

In summary, this IS/MND provides a project-specific environmental analysis to determine if the proposed PGEF project would result in any significant impacts not adequately addressed in the

2005 LRDP EIR as supplemented and updated by the 2005 LRDP Amendment 2 EIR and/or if additional MMs beyond those adopted in the MMRP for the 2005 LRDP Amendment 2 would be required to reduce identified impacts. In accordance with the *State CEQA Guidelines*, an MND is the appropriate environmental document because, after incorporation of the identified MMRP and any proposed project-specific MMs, the proposed project would not result in any new significant impact that are not examined in the 2005 LRDP EIR as supplemented and updated by the 2005 LRDP Amendment 2 EIR or in a significant increase in the previously identified impacts.

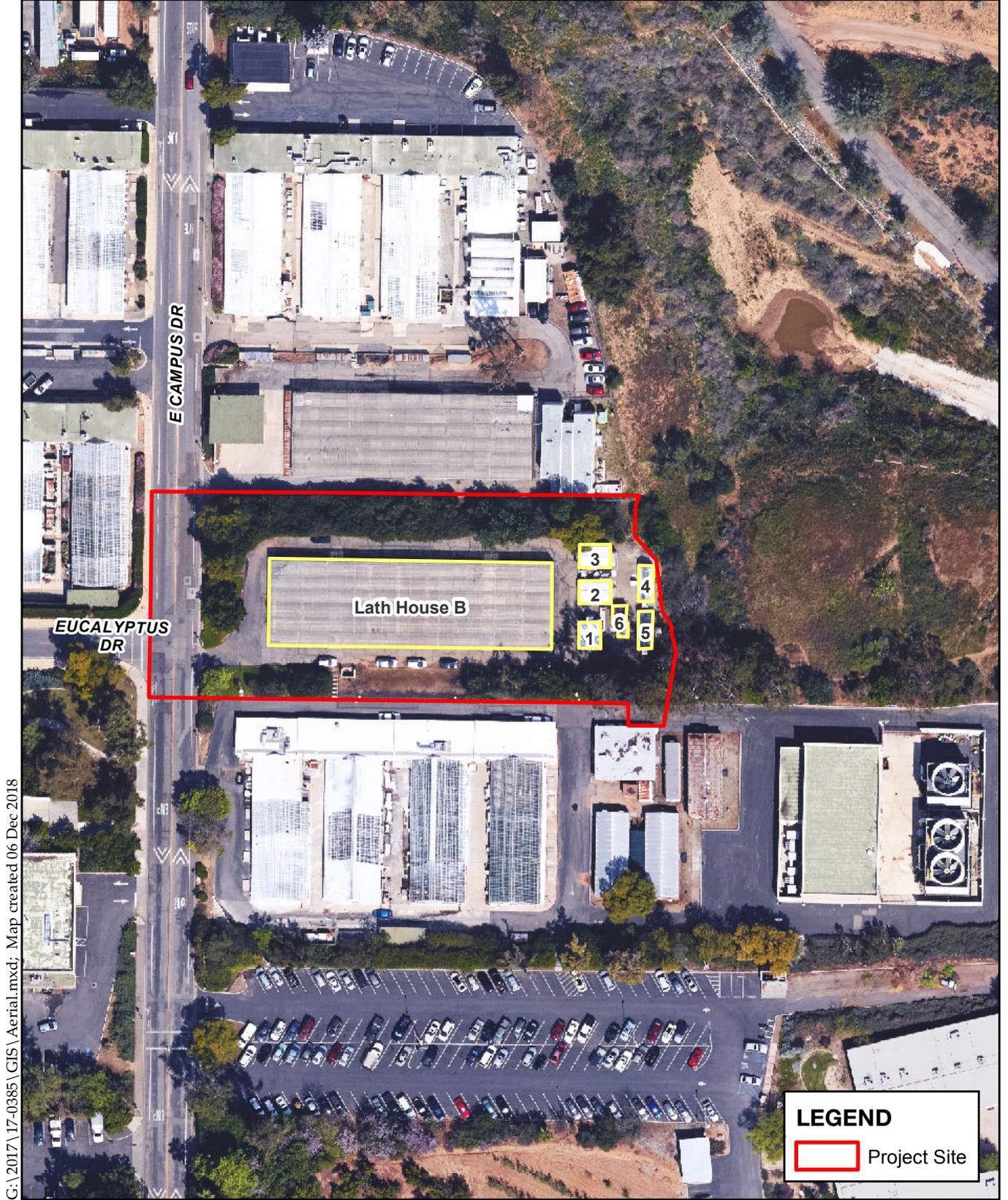
This IS, along with a Notice of Intent to Adopt an MND, has been circulated by the SCH Office of Planning and Research for review by State agencies and to any responsible agencies, trustee agencies, and interested parties, as required by CEQA, for a 30-day public review. Following receipt and evaluation of comments from agencies, organizations, and/or individuals, the UC will determine whether any substantial new environmental issues have been raised. It is anticipated that the proposed project will subsequently be submitted to the Chancellor for consideration in Spring 2019.

## **II. PROJECT DESCRIPTION**

The project site is currently developed with Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house (Arabidopsis is a type of small flowering plants related to cabbage and mustard), a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet (see **Figure 3 – Project Site Aerial Map**). The proposed project would involve the demolition of all the facilities on site; removal of the existing landscape along the northern, southern, and western portion of the site; removal of walls; removal of gutter; removal of utilities; and removal of associated pavement (see **Figure 4 – Demolition Plan**). Subsequent to demolition activities, the proposed project would include the construction of a 2-story, approximately 38,000 gsf plant growth environments facility, one Americans with Disabilities (ADA) accessible parking space, hammerhead driveway, landscape, and associated on-site improvements (see **Figure 5 – Conceptual Site Plan**). There are no off-campus modifications associated with the proposed project. More detailed information regarding the project description is provided below under “Proposed Project Components.”

### **1. PROJECT LOCATION**

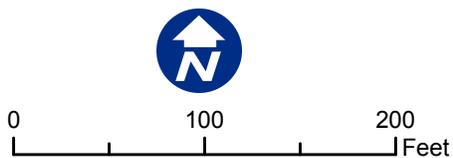
The UCR main campus is located within the City of Riverside, approximately 1.5 miles east of downtown Riverside and just west of the Box Springs Mountains. The UCR campus is bisected by the Interstate 215 (I-215)/State Route 60 (SR-60) freeways. Specifically, the approximately 1.25-acre project site is located within the East Campus Plant Growth Complex (East Complex), east of East Campus Drive at the eastern terminus of Eucalyptus Drive. Surrounding uses include Lathhouse 3 and supporting structures to the north, Greenhouses 18 through 21 and supporting structures to the south, open space to the east, and East Campus Drive followed by UCR campus facilities to the west. **Figure 1** shows the regional location and local vicinity of the proposed project, **Figure 2** provides a land use campus plan map of the UCR campus, including the location of the proposed project, and **Figure 3** shows an aerial map of the project site and its surrounding area.



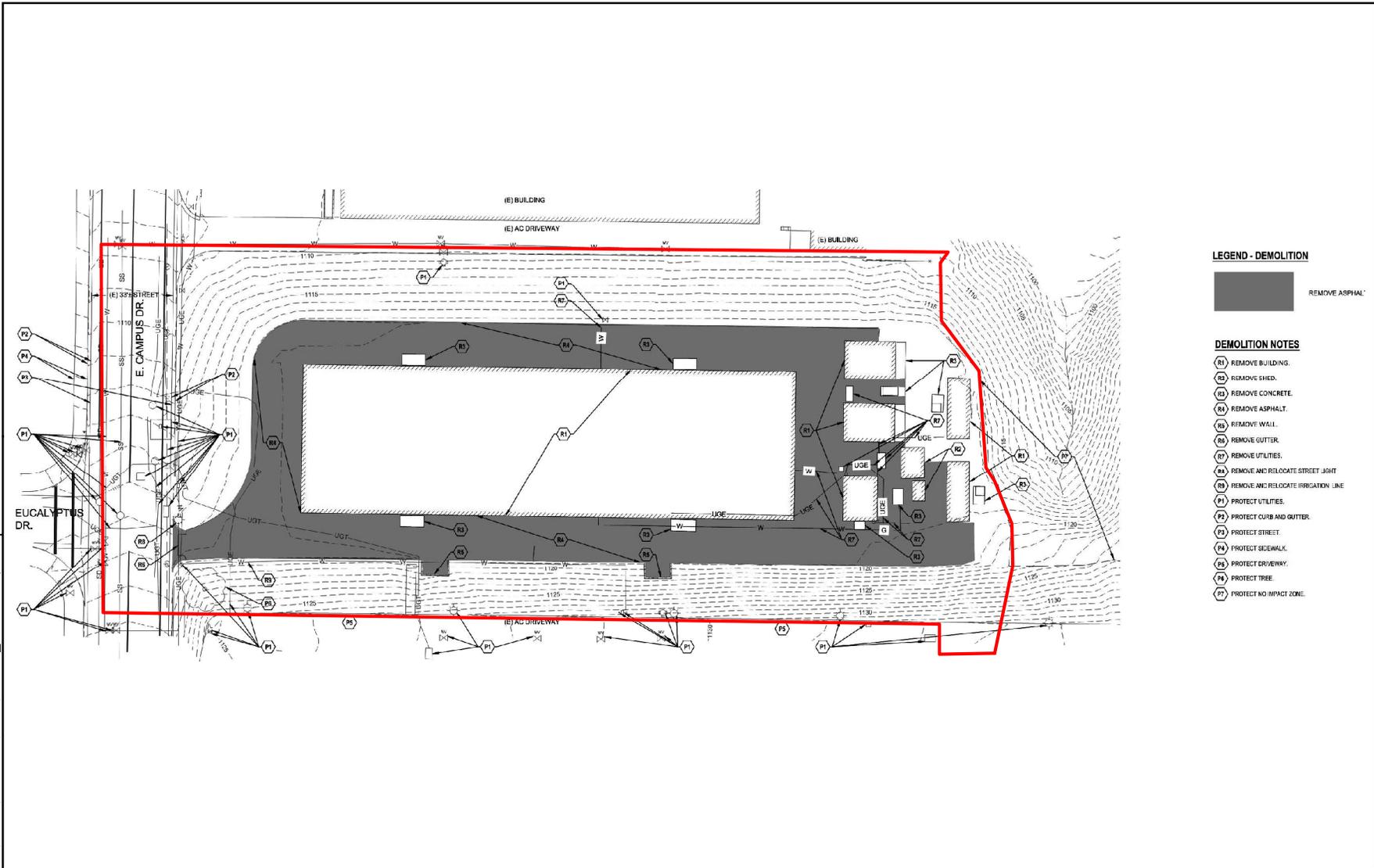
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Source: UC Riverside, April 2018.

**Figure 3 - Project Site Aerial Map**  
UCR Plant Growth Environments Facility



C:\2017\17-0385\GIS\Demo\_Plan.mxd; Map revised 07 Feb 2019



**LEGEND - DEMOLITION**

 REMOVE ASPHALT

**DEMOLITION NOTES**

-  REMOVE BUILDING
-  REMOVE SHED
-  REMOVE CONCRETE
-  REMOVE ASPHALT
-  REMOVE WALL
-  REMOVE GUTTER
-  REMOVE UTILITIES
-  REMOVE AND RELOCATE STREET LIGHT
-  REMOVE AND RELOCATE IRRIGATION LINE
-  PROTECT UTILITIES
-  PROTECT CURB AND GUTTER
-  PROTECT STREET
-  PROTECT SIDEWALK
-  PROTECT DRIVEWAY
-  PROTECT TREE
-  PROTECT NO IMPACT ZONE

Source: UC Riverside, April 2018.

**Figure 4 - Demolition Plan**  
UCR Plant Growth Environments Facility



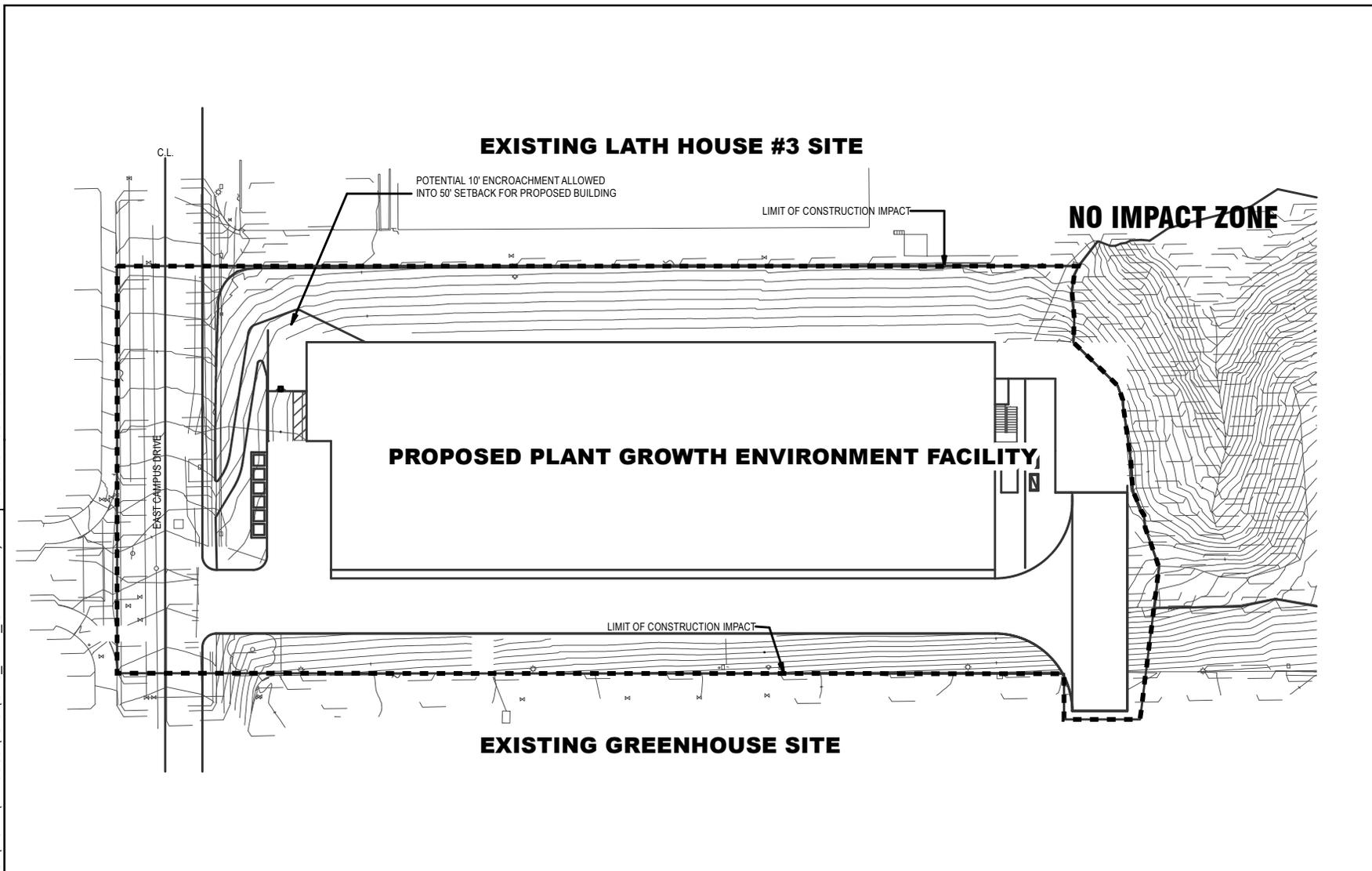
Not to Scale

**LEGEND**

 Project Boundary



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Source: UC Riverside, April 2018.

**Figure 5 - Conceptual Site Plan**  
UCR Plant Growth Environments Facility



Not to Scale

For the purposes of this IS/MND, the “project site” includes the areas that would be subject to physical modifications to implement the proposed project, including, but not limited to, building demolition, grading and construction, vehicular and non-vehicular circulation, hardscape and landscape, and infrastructure improvements, as described in this section. The project site encompasses approximately 1.25 acres and is shown on the conceptual site plan provided on **Figure 5**. Potential construction staging areas ranging in size from approximately 0.10 acres to 0.33 acres are provided on **Figure 6 – Potential Construction Staging Areas**, and are included in this analysis.

## 2. ENVIRONMENTAL SETTING

The 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR include descriptions of the regulatory and environmental setting for the region, the County and City, and the UCR campus, though the 2005 LRDP Amendment 2 EIR largely focuses on the West Campus. The regulatory and environmental settings for many of the topics addressed in this IS/MND have not substantively changed since preparation of the 2005 LRDP EIR or the 2005 LRDP Amendment 2 EIR. Therefore, they are not wholly repeated in this document. Particularly relevant and site-specific details of the regulatory and environmental settings are summarized in this IS/MND. Additionally, updated regulations related to Air Quality, GHGs and Tribal Cultural Resources are incorporated in the environmental settings of that particular environmental topic. Following is a description of the environmental setting for the proposed project and surrounding areas.

As shown in **Figure 3**, the project site is currently developed with Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet. As further discussed in Section V.5, Cultural Resources, of this IS/MND, none of the existing buildings on site qualify as historic resources, as defined by CEQA. The remainder of the site includes paved areas for parking, vehicular access, pedestrian access, and landscaped areas consisting primarily of turf, dirt, and a landscaped slope with trees and ornamental vegetation.

Vehicular access to the project site is currently provided from East Campus Drive and includes a service driveway that provides direct access to the existing buildings. No pedestrian pathways are located along the eastern side of East Campus Drive, in front of the project site.

Elevations on the project site range from approximately 1,110 feet above mean sea level to 1,180 feet above mean sea level. The project site is located on a stepped terrace with slope banks immediately to the north, south, and west. The slope bank at the north slopes down approximately 10 feet to the adjacent Lathhouse 3 and supporting structures site and the slope bank at the south slopes up approximately 10 feet to the adjacent Greenhouses 18-21 and supporting structures site. A smaller slope bank at the west boundary slopes down approximately five feet to East Campus Drive. There is a large natural slope/drainage of more than 20 feet to the east of the site that slopes down into a flow line, terminating at the Botanic Garden Detention Basin (Detention Basin).

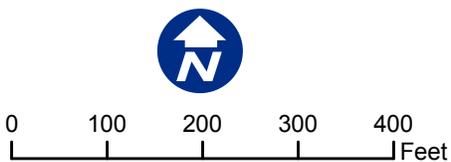
Regionally, as with all of Southern California, the UCR campus lies within a seismically active area. There are no known active or potentially active faults within the project site or the immediate vicinity. The nearest active fault is the San Jacinto Fault Zone located approximately 4.9 miles to the northeast.

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Source: UC Riverside, April 2018.

**Figure 6 - Potential Construction Staging Areas**  
UCR Plant Growth Environments Facility



### 3. BACKGROUND AND NEED FOR THE PROPOSED PROJECT

UCR first opened as an undergraduate liberal arts college in 1954 on the California Citrus Experiment Station (CES) Box Springs site. In 1956, The Regents reevaluated UCR as an undergraduate liberal arts college and decided that the UC system was intended for instruction and research. Consequently, in 1959, UCR was designated a full-fledged UC campus with graduate programs and professional schools. Herman Theodore Spieth was campus Provost from 1956 to 1964 and oversaw the transition of UCR from a liberal arts college into the UC system. Spieth founded the College of Agriculture which combined the work of the CES with undergraduate and graduate teaching. The Graduate Division opened in 1961 with letters, sciences, and agriculture programs attracting students from all over the world. That same year, The Regents renamed CES, the Citrus Research Center and Agricultural Experiment Station (CRC-AES).

With the expansion of UCR College of Agriculture and the CRC-AES, there was more funding to expand plant growth infrastructure on campus. The mesa area on campus was allocated to the Division of Life Sciences where plant growth facilities, including glass houses and lathhouses, were constructed in the 1950s and 1960s to support the Life Sciences departments including the Department of Horticulture, now known as the Department of Botany and Plant Sciences.

The UCR strategic plan, *UCR 2020: The Path of Preeminence* outlines future growth for the Bourns College of Engineering, College of Natural and Agricultural Sciences (CNAS), SOM, College of Humanities, and Arts and Social Sciences. The CNAS is growing and plant sciences research is a top priority. UCR aspires to be a leader in crop and agricultural systems biology and its related fields over the next two to three decades.

Plant science research within the CNAS is currently conducted in 116 campus facilities including approximately 236,000 gsf of space for growth chamber, greenhouse, headhouse, lathhouse, screenhouse, and support function facilities. The plant growth facilities are located at two major sites on the UCR campus, the East Campus Plant Growth Complex (East Complex) located on the east edge of the main UCR campus, and the West Campus Plant Growth Complex (West Complex) located west of the main campus across the I-215/SR-60 freeways. As previously mentioned, the project site is located within the East Complex.

The existing plant growth glass houses were constructed in 1956 and were moved onto the project site sometime after 1965. The existing Arabidopsis plant growth house was constructed in 1965 and was moved to the project site sometime after 1965. The Lathhouse B facility was constructed on the project site around 1965. The temporary compost toilet and metal shed was constructed on the project site sometime after 1968.

Similar to the existing structures on site, most of the plant growth facilities at UCR were constructed more than 50 years ago and are currently in poor condition due to heavy use and advanced age. To remain competitive in crop and agricultural systems biology, and to become internationally preeminent in agricultural research, UCR needs contemporary plant growth facilities that meet the requirements of a high-level university research program.

The UCR Campus Planning Office and CNAS recently worked together to define the future needs for plant growth research and to develop an implementation plan for new facilities. The *Plant Growth Environments & Support Facilities Relocation Study* dated April 25, 2016 provides future facility recommendations and guidelines. The proposed PGEF project is the first facility to move forward into the planning, design, and construction stages of the projects as defined in the *Plant*

*Growth Environments & Support Facilities Relocation Study.* The proposed project would be designed to fit within the existing campus context, comply with the LRDP, as amended, meet campus design guidelines, and act as an appropriate visual terminus for Eucalyptus Drive.

#### **4. PROJECT GOALS AND OBJECTIVES**

The goals and objectives of the proposed project are:

- Plan a facility that can be shared in a flexible manner across CNAS departments and support a wide range of research functions and environments.
- Plan a facility that would support faculty recruitment and retention.
- Balance the opportunities for segregated or isolated and shared-collaborative work spaces.
- Plan for technology access at all spaces with both wired and wireless capability.
- Place a priority on research space functions, not administrative space.
- Plan for appropriate height, lighting, temperature, and humidity control.
- Plan for different climate zone ranges, including air conditioned, evaporative cooled, and heated spaces.
- Plan for minimum Leadership in Energy and Environmental Design (LEED) Silver or equivalent per University of California Sustainable Practices Policy.

#### **5. PROPOSED PROJECT COMPONENTS**

The following project components are described below:

- Demolition and Building Construction
- Operations
- Employee Populations
- Circulation and Parking
- Landscape, Hardscape and Lighting
- Utilities/Infrastructure
- Sustainable Building Features
- Construction Activities

##### **Demolition and Building Construction**

The proposed project would involve the demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet; removal of walls; removal of gutter; removal of utilities; and removal of asphalt and concrete pavement throughout the project site; and removal of landscape along the northern, southern, and western portion of the project site. The project expects to grade the entire site and export approximately 1,210 cubic yards of soil/debris. The proposed project would include construction of a 2-story, approximately 38,000 gsf, approximately 33-foot high, cast-in-place concrete PGEF structure. The first floor would be constructed with an office, break room, electrical room, mechanical room, restrooms, shower, and

a shelled space with a future buildout to house growth chambers and support functions, pending available funding. The second floor would include greenhouse and headhouse functions, associated support functions (e.g., lab, clean storage, potting), and restrooms. Proposed on-site stationary equipment include packaged air handlers within the first-floor mechanical room, evaporative cooling and fan coil units for the greenhouse, and an approximately 550 kilowatt/450 kVA diesel standby generator with an approximately 160-gallon belly tank on the east side of the structure. An approximately 600-square foot service yard is proposed east of the PGEF project. **Figure 5** provides a conceptual site plan for the proposed PGEF project.

The proposed project would be designed and constructed in compliance with applicable requirements of the California Building Code (CBC) and California Fire Code. Specifically, fire sprinklers, fire alarm systems, emergency lighting, emergency response notification systems, and illuminated signage would be installed.

## **Operations**

### ***Hours of Operation***

Under existing conditions, the Lathhouse B facility and plant growth houses are accessible during typical campus business hours, Monday through Friday from about 8:00 AM to 5:00 PM. Restricted access is available outside of these hours based on research activity needs. The same hours of operation would occur with implementation of the proposed project.

## **Employee Populations**

### ***Employee Population***

Currently, there are typically eight to 10 research teams (including faculty and students) utilizing the Lathhouse B facility and plant growth houses. The teams use the facility intermittently for set-up, maintenance, and break-down of research activity, with a maximum of 10 personnel working actively within the space at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel. These positions are expected to be filled by the local labor pool and students already on campus; however, for the purpose of this document, the analysis would include the increase of 20 new personnel to campus.

## **Circulation and Parking**

The proposed circulation system with implementation of the proposed PGEF project is described below and has been designed to take into consideration existing and planned vehicular and non-vehicular circulation surrounding the project site.

### ***Vehicular Circulation***

Under existing conditions, vehicles access the project site from East Campus Drive at Eucalyptus Drive. A paved looped driveway surrounds the Lathhouse B facility. Access to the project site would remain at the same location with implementation of the proposed project. However, the on-site looped driveway would be eliminated and be replaced with a 20-foot wide fire access lane along the south portion of the site with a hammerhead turn-around at the southeast portion of the site for fire truck egress.

### ***Non-Vehicular Circulation***

Existing sidewalks are located on the west side of East Campus Drive and on both sides of Eucalyptus Drive, while bicycle lanes are located on both sides of East Campus Drive. Pedestrians and bicyclists would have access to the site from Eucalyptus Drive and East Campus Drive. To improve pedestrian linkages to the project site, new east-west crosswalks are proposed at the intersection of East Campus Drive at Eucalyptus Drive. An ADA compliant pedestrian pathway is proposed on site that would provide a path of travel from an ADA parking space to the PGEF building entrance. An ADA pedestrian pathway, as required for safety and current ADA Standards, would be constructed to connect to a concrete landing suitable for public transit pick-up on East Campus Drive in front of the facility. Bicycle racks would be provided at the PGEF building for those who ride their bicycles to the project site.

### ***Parking***

Existing vehicles currently park along the perimeter of the looped driveway. With implementation of the proposed project, no vehicles would be allowed to park within the fire access lane. One accessible parking space would be located on site. All other vehicles would be required to park at Parking Lot 9 or other campus-designated parking areas.

### **Landscape, Hardscape and Lighting**

#### ***Landscape/Hardscape***

The proposed project would involve removal of the existing landscape along the northern, southern, and western portion of the site. Replacement landscaping/impervious areas would increase from that of existing conditions from approximately 20,500 square feet to approximately 23,500 square feet because the existing looped driveway would be replaced with a hammerhead driveway with implementation of the proposed project. The proposed landscaping would comply with Campus Design Guidelines for landscape design requirements.

The existing looped asphalt driveway would be removed and replaced with approximately 9,500 square feet of pavement including a hammerhead driveway, an approximately 600-square-foot service yard, one accessible parking space, and an ADA compliant pathway.

#### ***Interior and Exterior Lighting***

The proposed project's lighting design would provide sufficient illumination to ensure visual performance and safety. The quantity of lighting would be determined by adherence to recommended illuminance levels derived from the latest industry standards and Campus Design Guidelines and any applicable code requirements. Indoor and outdoor lighting control systems would conform to California Administrative Code Title 24 (Title 24) energy efficiency requirements.

The interior lighting system would consist of energy-efficient Light Emitting Diode (LED) lighting fixtures. The lighting control system would provide time-based, sensor-based, and manual lighting control. All system device would be networked together, enabling digital communication between devices. Outdoor lighting would include the lighting of vehicular access and parking. Outdoor lighting controls would be tied to the network control system via panel with programmable time-of-use scheduling via astronomical clock.

Emergency/night lighting would be provided by switched and unswitched branch circuits fed from an emergency lighting panel. Exit signs and emergency egress lighting would be provided throughout the facility to illuminate egress corridors, stairwells, etc.

## Utilities/Infrastructure

The proposed project would require connections to existing campus utilities, including domestic water, sewer, storm drains, natural gas, and electric systems that are currently located in or adjacent to the project site, as described below. The final sizing and design of on-site facilities would occur during final building design. Following is a description of proposed utility systems, including water quality Best Management Practices (BMPs).

- **Domestic, Fire, and Irrigation Water.** An 8-inch domestic water line runs within East Campus Drive provided by the UCR Physical Plant. All existing water connections to the site would be abandoned. A separate hot tap connection and manifold is proposed that would include one service connection for domestic water and one service connection for fire sprinkler water. The connection to serve landscape irrigation would be tapped off the domestic water service line. A fire water connection is proposed to feed the hydrants, sprinkler systems for the facility, along with Fire Department Connection assemblies.
- **Sewer.** An existing 6-inch sanitary sewer line runs within East Campus Drive. Existing sewer connections would be abandoned and removed. A new polyvinyl chloride (PVC) sanitary sewer line would connect to the manhole located at the intersection of Eucalyptus Drive and East Campus Drive.
- **Chilled Water.** Chilled water is available from the UCR Central Plant. The proposed service connection would be made at the main line available within East Campus Drive.
- **Storm Water and Water Quality.** All storm water runoff would be managed for both quality and quantity as required by current regulations (as further discussed in Section V.9, Hydrology and Water Quality, of this IS/MND). Water quality requirements include treatment as required by LEED 2009 Sustainable Sites Credit 6.2 which requires that a storm water management plan be implemented that reduces impervious cover, promotes infiltration, and captures and treats the storm water runoff from 90 percent of the average annual rainfall using BMPs. Additionally, conveyance facilities would be designed in compliance with Riverside County Flood and Water Conservation District requirements in effect at the time of permit issuance.
- Storm water quality would be managed using treatment-based low impact development (LID) BMPs. The project would follow the Riverside County Flood Control and Water Conservation District BMPs. The on-site storm drain system would collect roof runoff and surface drainage via a series of drain in-lets. Runoff from the project site would continue to discharge at the existing pervious areas on site and eventually to the storm drain system.
- **Electricity and Natural Gas.** Electrical service would be supplied from the campus normal power distribution system (12 kV). Two existing circuits would be intercepted in Vault 11, located west of the building in East Campus Drive, and extended to a new exterior 12 kV sectionalizing switch and then to a new oil filled 750 kVA transformer pad mounted transformer. Natural gas would be piped to boilers, water heaters, and lab outlets to meet the project needs. Existing electric and natural gas lines would be relocated on site as necessary to accommodate construction of the project.
- **Telecommunications.** Telecommunications infrastructure would be supplied to the proposed project via a new connection from an existing manhole to the proposed PGEF building main point of entry.

## **Sustainable Building Features**

The proposed project would comply with the University of California Policy on Sustainable Practices (Sustainable Practices Policy) and adopt the principles of energy efficiency and sustainability to the fullest extent possible, consistent with budgetary constraints and regulatory and programmatic requirements. LEED is a green building rating system that contains prerequisites and credits in five areas: (1) environmentally sensitive site planning; (2) water conservation; (3) energy efficiency; (4) conservation of materials and resources; and (5) indoor air quality. The Sustainable Practices Policy establishes a minimum standard of a LEED “Silver” for new buildings and identifies that new buildings would strive to achieve certification at a U.S. Green Building Council (USGBC) LEED “Gold” rating or higher, whenever possible within the constraints of program needs and standard budget parameters.

The design, construction, and operation of the proposed PGEF project would include a series of green building strategies under development, along with mandatory strategies required by the 2016 California Green Building Standards Code (CalGreen) and the Sustainable Practices Policy to exceed California Building Code Title 24 energy efficiency requirements by 20 percent or greater (for new buildings). Additionally, the proposed PGEF project would meet at least the prerequisite of the Laboratories for the 21<sup>st</sup> Century (Labs21) Environmental Performance Criteria (EPC).

## **Construction Activities**

Construction of the proposed project is anticipated to begin in April 2019 and be completed by June 2020. The project site encompasses approximately 1.25 acres. Although the project site is approximately 1.25 acres, the actual area of impact is only approximately 48,000 square feet (approximately 1.1 acre). Additionally, temporary construction staging and equipment laydown could occur on a vacant parcel on the Greenhouses 18-21 site immediately south of the project site (approximately 0.10 acre), the Fawcett lab parking area (Lot 42) southwest of the project site (approximately 0.12 acre), or on a vacant parcel east of Parking Lot 10<sup>2</sup> northeast of the project site (approximately 0.33 acre) (refer to **Figure 6**). In the event the Fawcett Lab parking area (Lot 42) is used for construction staging and equipment laydown, approximately 7 parking spaces for permit parking holders would be temporarily unavailable and would be temporarily reassigned to another on-campus designated parking area (Parking Lot 30).

As described above, utility lines to serve the proposed project would connect to existing facilities in the vicinity of the project site. Utility connections would involve temporary disturbance of the lanes along East Campus Drive. A traffic control plan would be prepared noting at least one travel lane along East Campus Drive would be maintained with traffic controls in place when needed.

Demolition activities would involve the demolition of Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet; removal of asphalt and concrete pavement throughout the project site; removal of walls; removal of gutter; removal of utilities; removal of landscape along the northern, southern, and western portion of the project site; and approximately 1,210 cubic yards of export materials. Truck capacity is assumed to be 16 cubic yards, resulting in approximately 76 truckloads of import over a 7-day period, or approximately 11 truckloads per day during the

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<sup>2</sup> The vacant parcel east of Parking Lot 10 has been used as construction parking and laydown area for past UCR campus construction activities.

grading phase.

Limited earth-moving activities (grading/excavation) including approximately 1,210 cubic yards of exported soils would be required to accommodate the new building pad and on-site improvements. The area for the building pad would be over-excavated and recompacted. The maximum depth of excavation would be up to six feet for the building foundation.

Depending on the construction phase, implementation of the proposed project would require common equipment, such as a dozer, tractor/loader/backhoe, concrete/industrial saw, crane, forklift, paver, roller, compressor, cement and mortar mixers. Because of the limited size of the site, the number of pieces of equipment on site at any given time would also be limited. As required by existing regulations, soil erosion from the project site during construction would be controlled through the use of several BMPs, including the use of sandbags as barriers. The construction site would be encircled by sandbags, and stabilized driveways would be provided at construction entrance and exit areas. Appropriate BMPs to minimize sedimentation entering the storm drain system would be provided.

### ***Vehicular and Pedestrian Circulation during Construction***

During short-term construction activities, access to the site would be limited to authorized Campus staff, construction workers, and emergency providers. No public access to the site would be allowed during construction activities. While there would be temporary travel lane closures along East Campus Drive, at least one travel lane would be maintained with traffic controls in place when needed and pedestrian travel would be re-routed to avoid the construction area.

It is assumed that construction traffic would use the I-215 freeway, University Avenue, to West Campus Drive, South Campus Drive, and East Campus Drive or the I-215 freeway, Martin Luther King Boulevard to Canyon Crest Drive, West Campus Drive, South Campus Drive, and East Campus Drive to access the project site. Pursuant to PP 4.14-2 from the 2005 LRDP Amendment 2 EIR, the construction schedules or major projects would be coordinated to adjust construction schedules, work hours, and access routes to the extent feasible in order to reduce construction-related traffic congestion.

It is estimated there would be a range of approximately 4 to 28 construction workers/vendors trips per day at the project site during construction activities. Construction workers would park on campus, within a short walking distance of the project site (e.g., Parking Lot 10, Parking Lot 42).

## **6. RELATIONSHIP TO THE 2005 LONG RANGE DEVELOPMENT PLAN AMENDMENT 2**

Figure 13 of the 2005 LRDP Amendment 2 provides the current Land Use Plan for the UCR campus. As shown, the project site is in an area designated as “Academic” which allows for the development of the proposed project.

The 2005 LRDP Amendment 2, approved in November 2011, projected total building space on campus to be approximately 14.9 million gsf by 2020/2021, including approximately 3.1 million gsf allocated to the SOM. As identified in Table 3.0-5 of the 2005 LRDP Amendment 2 EIR, of this amount, there is a total of 5.5 million gsf allocated to “Academic” uses (which includes the proposed PGEF project). The existing on-campus development is approximately 7.2 million gsf, and approximately 235,350 gsf of net new development which has been approved but not yet built. Therefore, there is approximately 7.46 million gsf of development allocation remaining on

campus. The proposed project involves an increase of up to approximately 24,894 gsf of net new development on campus. The increase in development with the proposed project are well within the remaining “Academic” building allocation and projected total building space in the LRDP EIR. As further discussed in Section V.10, Land Use and Planning, of this IS/MND, the 2005 LRDP Amendment 2 includes PSs for the following issues to guide expansion and development of the UCR Campus: land use, circulation and parking, open space and landscape, and campus and community. These planning strategies are required to be implemented with each development project on campus and have been specifically identified in the 2005 LRDP EIR as supplemented and updated by the 2005 LRDP Amendment 2 EIR, along with general development strategies. The PSs that are applicable to the proposed project have been incorporated into the project as identified for each topical issue in the IS/MND.

## **7. ANTICIPATED DISCRETIONARY APPROVALS**

The Regents, or its delegate, would consider the proposed PGEF project, the tiered IS/MND, and UCR’s request for project approval. Delegates of The Regents include, but are not limited to, the UCR Chancellor. UCR and the responsible agencies identified below are expected to use the information contained in this tiered IS/MND for consideration of approvals related to and involved in the implementation of the proposed project. This tiered IS/MND has been prepared to inform all State, regional, and local government approvals needed for construction and/or operation of the proposed project, whether or not such actions are known or are explicitly listed. Anticipated approvals required from UCR and the responsible agencies to implement the proposed project include, but are not limited to, those listed below.

University of California Board of Regents, or its Designee

- Adoption of the Final Tiered Initial Study/Mitigated Negative Declaration
- Approval of the project Budget
- Approval of Financing
- Approval of the Design of the PGEF project

**III. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED**

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Aesthetics                         | <input type="checkbox"/> Agriculture and Forestry Resources | <input type="checkbox"/> Air Quality               |
| <input type="checkbox"/> Biological Resources               | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Geology/Soils             |
| <input type="checkbox"/> Greenhouse Gas Emissions           | <input type="checkbox"/> Hazards & Hazardous Materials      | <input type="checkbox"/> Hydrology/Water Quality   |
| <input type="checkbox"/> Land Use/Planning                  | <input type="checkbox"/> Mineral Resources                  | <input type="checkbox"/> Noise                     |
| <input type="checkbox"/> Population/Housing                 | <input type="checkbox"/> Public Services                    | <input type="checkbox"/> Recreation                |
| <input type="checkbox"/> Transportation/Traffic             | <input type="checkbox"/> Tribal Cultural Resources          | <input type="checkbox"/> Utilities/Service Systems |
| <input type="checkbox"/> Mandatory Findings of Significance |   |  |

**IV. DETERMINATION: (To be completed by lead agency)**

On the basis of the initial evaluation that follows:

- I find that the proposed project WOULD NOT have a significant effect on the environment, and recommend that a NEGATIVE DECLARATION be adopted.
- I find that although the proposed project could have a significant effect on the environment, the project impacts were adequately addressed in an earlier document or there will not be a significant effect in this case because revisions in the project have been made or project-specific mitigation measures have been proposed that will avoid or reduce any potential significant effects to a less than significant level and recommend that a MITIGATED NEGATIVE DECLARATION be adopted.
- I find that the proposed project MAY have a significant effect on the environment and recommend that an ENVIRONMENTAL IMPACT REPORT be certified.

Jaime Engbrecht  
Signature

Jaime Engbrecht  
Printed Name

2/14/2019  
Date

## **V. EVALUATION OF ENVIRONMENTAL IMPACTS**

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

1. **“Potentially Significant Impact”** is appropriate if there is substantial evidence that the project’s effect may be significant even with the incorporation of Planning Strategies (PSs), Programs and Practices (PPs), and Mitigation Measures (MMs) identified in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR. If there are one or more “Potentially Significant Impacts,” a Project EIR will be prepared.
2. **“Project Impact Adequately Addressed in LRDP EIR”** applies where the potential impacts of the proposed project were adequately addressed in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR, and the PSs, PPs, and MMs identified in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR will mitigate any impacts of the proposed project to the extent feasible. All applicable MMs identified in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR are incorporated into the project as proposed. The impact analysis in this document summarizes and cross references the relevant analysis in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR.
3. **“Less Than Significant With Project-level Mitigation Incorporated”** applies where the incorporation of project-specific mitigation measures will reduce an effect from “Potentially Significant Impact” to a “Less Than Significant Impact”. All project-level mitigation measures must be described, including a brief explanation of how the measures reduce the effect to a less than significant level.
4. **“Less Than Significant Impact”** applies where the proposed project will not result in any significant effects. The effects may or may not have been discussed in the UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR. The project impact is less than significant without the incorporation of UCR 2005 LRDP EIR as supplemented and updated by the UCR 2005 LRDP Amendment 2 EIR or project-level mitigation.
5. **“No Impact”** applies where the proposed project would not result in any impact in the category or the category does not apply. “No Impact” answers need to be adequately supported by the information sources cited, which show that the impact does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

## **IMPACT QUESTIONS AND RESPONSES**

### **1. AESTHETICS**

The analysis of Aesthetics is tiered from the 2005 LRDP EIR and was addressed in Section 4.1, Aesthetics, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to aesthetics/visual change include demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed; removal of asphalt and concrete pavement throughout the project site; removal of walls; removal of gutter; removal of utilities; and removal of landscape along the northern, southern, and western portion of the project site. Once demolition activities have been completed, the proposed project would involve grading and construction of a 2-story, approximately 33-foot high, 38,000 gsf PGEF building and installation of stationary equipment (e.g., standby generator). The proposed project also involves construction of a hammerhead driveway, a service yard, one ADA parking space, an ADA compliant pathway with landing as required, a retaining wall along the southern portion of the site, crosswalks at East Campus Drive and Eucalyptus Drive to connect the project site to existing sidewalks; installation of landscape per Campus Design Guidelines, interior/exterior lighting fixtures, and infrastructure improvements. Temporary construction staging and equipment laydown could occur on a vacant parcel on the Greenhouses 18-21 site immediately south of the project site, the Fawcett lab parking area (Lot 42) southwest of the project site, or on a vacant parcel east of Parking Lot 10 northeast of the project site (refer to **Figure 6**). In the event, Fawcett lab parking area (Lot 42) is used for construction staging area, those parking permit holders would be temporarily reassigned to Parking Lot 30.

The following applicable PSs, PPs, and MM were adopted as part of the 2005 LRDP EIR as supplemented and updated by the 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

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

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

**PP 4.1-2(a)**                            The Campus shall continue to provide design professionals with the 2007 Campus Design Guidelines and instructions to develop project-specific landscape plans that are consistent with the Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible. *(This is identical to Land Use PP 4.9-1[b].)*

**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.

**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.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

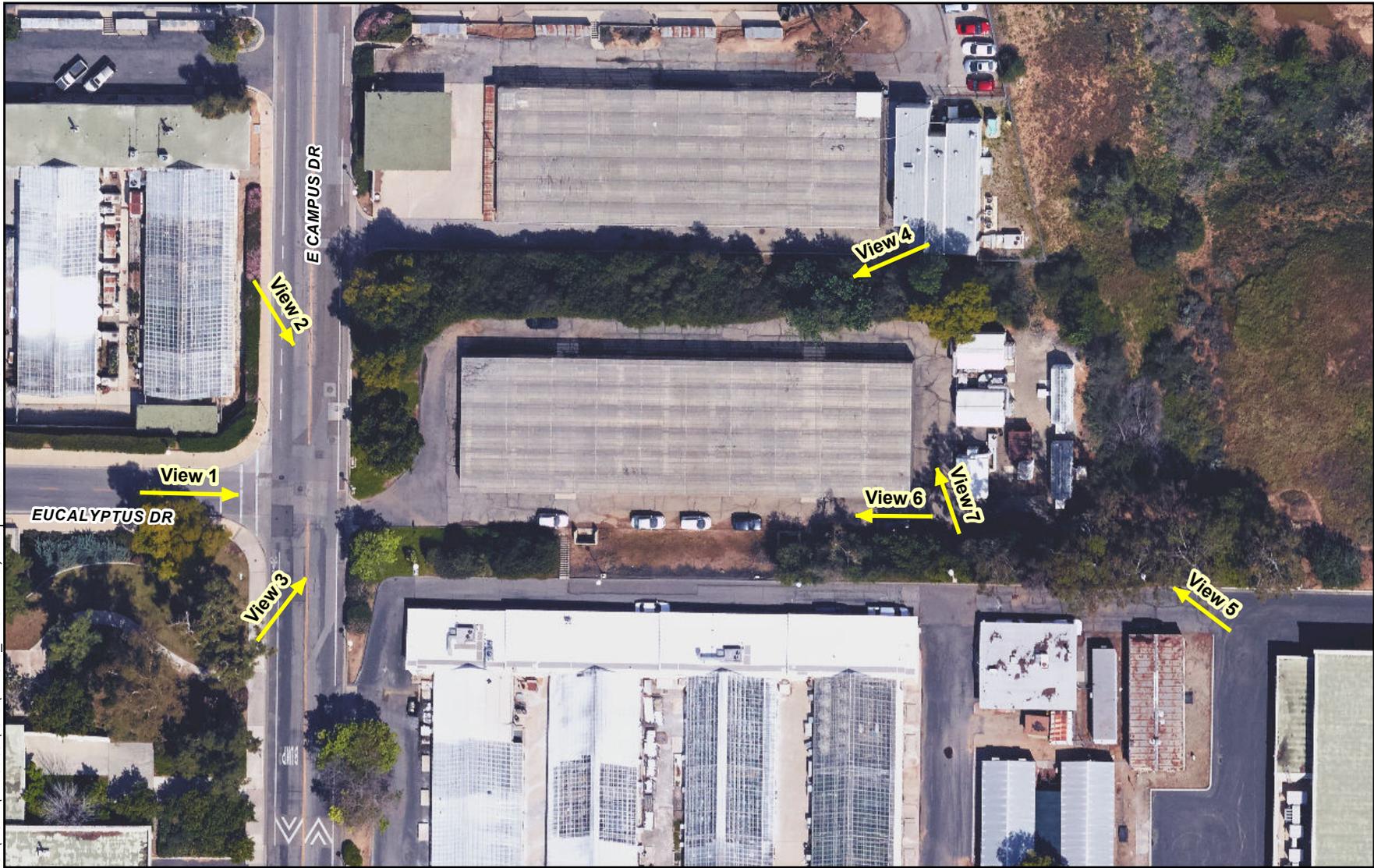
***Discussion***

As discussed on page 4.1-13 of the 2005 LRDP 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). The 2005 LRDP EIR concluded that scenic vistas for the campus are limited to panoramic views of the Box Springs Mountains from publicly accessible viewpoints. Views of these mountains from many vantage points on the East Campus are partially blocked by buildings, mature trees, and landscaping. Notably, there are panoramic views of the Box Springs Mountains from Carillon Mall and the Athletic Fields (east of Canyon Crest Drive) within the East Campus; however, views in some portions of the Carillon Mall are obstructed by a large number of mature trees. While views of the adjacent mountains are generally available from locations on the West Campus, these locations are not publicly accessible with the exception of Parking Lot 30. There are no identified focal views for the UCR campus.

The analysis of Impact 4.1-1 in Section 4.1, Aesthetics, of the 2005 LRDP EIR concluded that with implementation of PS Open Space 5 (retaining Carillon Mall as a major campus Landmark Open Space) and PP 4.1-1 (developed in compliance with the Campus Design Guidelines), development under the 2005 LRDP would result in a less than significant impact to scenic vistas.

Figure 4.1-1 and Figure 4.1-4 Photo E of the 2005 LRDP EIR indicates that views of the Box Springs Mountains are available from the Research Greenhouse if looking eastward. The Research Greenhouse site is located immediately south of the project site. Similar to the Research Greenhouse site, partial distant views of the Box Springs Mountains with intervening structures and mature trees are also available from the project site looking east. Although the proposed PGEF project would be higher than the existing Lathhouse B facility, partial distant views of Box Springs Mountains would still be available along the project site’s frontage along East Campus Drive, from Eucalyptus Drive, and from southeast of the project site (refer to **Figure 7a – Photo Location Map, Figure 7b – Photograph Views, and Figure 7c – Photograph Views**). Thus, implementation of the proposed project would not affect public views of the Box Springs Mountains from vantage points along adjacent roadways looking towards the project site, from southeast of the project site looking north, or in the Research Greenhouse area as partial distant views of the Box Springs Mountains would still be made available. Therefore, the proposed project would have a less than significant impact on a scenic vista, consistent with the findings of the LRDP EIR.

C:\2017\17-0385\GIS\Photo\_Index.mxd; Map created 06 Dec 2018



Source: UC Riverside, April 2018.

**Figure 7a - Photo Location Map**  
UCR Plant Growth Environments Facility



0 100 200 Feet

View 1 - View from west of the project site.



View 2 - View from northwest of the project site.



View 3 - View from southwest of the project site.



View 4 - View from north of the project site.



Map revised 12/6/2018. C:\2017\17-0385\GIS\Photos\_b.mxd

**Figure 7b - Photograph Views**  
UCR Plant Growth Environments Facility



View 5 - View from southeast of the project site.



View 6 - View to the west from the southeastern portion of the project site.



View 7 - View to the north from the southeastern portion of the project site.



Map revised 12/7/2018. C:\2017\17-0385\GIS\Photos\_c.mxd

**Figure 7c - Photograph Views**  
UCR Plant Growth Environments Facility



***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

There would be a less than significant impact on scenic vistas. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As identified in the IS for the 2005 LRDP EIR, the UCR campus is bisected by the I-215/SR-60 freeway and is 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 (Caltrans 2011). Therefore, development under the 2005 LRDP was determined to have no impact related to State scenic highways. While there are no scenic highways in the campus vicinity, the 2005 LRDP includes the provision to retain the southeast hills and associated rock outcroppings, considered a scenic resource, as an Open Space Reserve. The proposed project is not located adjacent to the southeast hills identified as Open Space Reserve. Additionally, the temporary construction staging/equipment laydown could occur on a vacant parcel on the Greenhouses 18-21 site immediately south of the project site, the Fawcett lab parking area (Lot 42) southwest of the project site, or on a vacant parcel east of Parking Lot 10 northeast of the project site (refer to **Figure 6**), areas that are not within the Open Space Reserve. Therefore, there would be no impact from implementation of the proposed project on scenic resources, including within a State scenic highway, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not substantially damage scenic resources. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Would the project substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## ***Discussion***

The analysis of Impact 4.1-2 in the 2005 LRDP EIR concluded that, with implementation of PS Land Use 1 through 3, PS Open Space 1 through 7, PS Conservation 1 through 4, PS Campus & Community 1, PS Development Strategy 1 through 3, and PP 4.1-2(a) through PP 4.1-2(d), development under the 2005 LRDP would result in a less than significant impact to the visual character or quality of the campus and the immediately surrounding area. As discussed above, the proposed project design reflects compliance with the relevant PSs and PPs.

The project area is surrounded by existing development to the north, south, and west, open space to the east and the botanic gardens approximately 650 feet southeast of the project site. The primary views of the project area are from immediately adjacent vantage points; views from more distant vantage points are obstructed by intervening buildings and mature vegetation. The existing visual character of the project site and immediate surrounding areas is depicted in the site photographs provided on **Figures 7a through 7c** and are described below.

- **View 1 – View from west of the project site.** The photograph of View 1 depicts the view of the existing condition of the project site as viewed from vantage point west of the project site at the intersection of East Campus Drive and Eucalyptus Drive. The photograph is representative of the views for motorists or pedestrians traveling along Eucalyptus Drive or East Campus Drive toward the project site. East Campus Drive is in the foreground. Obstructed views of the Lathhouse B facility, parked vehicles, exterior lighting, and signage are in the middle ground of these views. The existing trees at the project’s frontage along East Campus Drive and along the project’s southern boundary are prominent visual features from this vantage point. The trees along the project’s frontage largely obstructs views into the project site. Views of the Box Springs Mountains are in the background (refer to **Figures 7a and 7b**).
- **View 2 – View from northwest of the project site.** The photograph of View 2 depicts views from vehicles and bicycles traveling along East Campus Drive that would enter the project site from the southwest or northwest of the project site. East Campus Drive, with bicycle lanes and the project site’s driveway entrance are in the foreground. Obstructed views of existing campus buildings south of the project site, exterior lighting, and signage along East Campus Drive are in the middle ground. As shown in the photograph, existing trees are prominent visual features from this vantage point, and these trees obstruct views into the project site (refer to **Figures 7a and 7b**).
- **View 3 – View from southwest of the project site.** The photograph of View 3 depicts views from vehicles, bicycles, and pedestrians traveling along East Campus Drive that would enter the project site from the southwest or northwest of the project site. East Campus Drive, with bicycle lanes, sidewalk, and driveway entrances are in the foreground. Obstructed views of existing campus buildings north of the project site, exterior lighting, and signage along East Campus Drive are in the middle ground. As shown in the photograph, existing trees are prominent visual features from these vantage points, and these trees largely obstruct views into the project site. Views of Box Springs Mountains are in the background (refer to **Figures 7a and 7b**).
- **View 4 – View from north of the project site.** The photograph of View 4 depicts the view looking south of the project site from the adjacent site. View of the existing Lathhouse B facility and associated structures on the project site are obstructed by mature trees and

landscaping. An internal access road is in the foreground. There are no distant background views from this vantage point (refer to **Figures 7a and 7b**).

- **View 5 - View from southeast of the project site.** The photograph of View 5 depicts the view looking northwest of the project site from the adjacent site. Views of the existing Lathhouse B facility and associated structures on the project site and views of existing campus buildings are primarily obstructed by mature trees and landscaping. The steep hill east of the project site is shown in the foreground. The distant views of Box Springs Mountains are primarily obstructed by the mature trees, landscaping, and campus buildings (refer to **Figures 7a and 7c**).
- **View 6 – View to the west from the southeastern portion of the project site.** The photograph of View 6 depicts the view of the existing access road in the foreground with vehicles parked along the access road. Partial views of the existing Lathhouse B and associated structures, and mature trees on the project site are in the middle ground (**Figures 7a and 7c**).
- **View 7 – View to the north from the southeastern portion of the project site.** The photograph of View 7 depicts the view of the existing access road in the foreground. Partial views of the existing Lathhouse B and associated structures, and mature trees on the project site are in the middle ground. There are no distant background views from this vantage point (**Figures 7a and 7c**).

To address visual changes associated with implementation of the proposed project and to address the relationship between the proposed project and the existing land uses surrounding the project site, conceptual rendering and building elevations are provided in **Figure 8a – Conceptual Rendering and Figures 8b and 8c - Building Elevations**.

The project site is currently developed with a one-story Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed. The proposed project involves demolition of all these facilities; removal of asphalt and concrete pavement throughout the project site; removal of walls; removal of gutter; removal of utilities; and removal of landscape along the northern, southern, and western portion of the project site for the construction of a 2-story, approximately 38,000 gsf, approximately 33-foot high, cast-in-place concrete PGEF structure. Temporary construction staging and equipment laydown could occur on a vacant parcel on the Greenhouses 18-21 site immediately south of the project site, the Fawcett lab parking area (Lot 42) southwest of the project site, or on a vacant parcel east of Parking Lot 10 northeast of the project site (refer to **Figure 6**). Views of the construction equipment staging and laydown area would only be temporary during construction activities. The construction staging area(s) would be reverted back to its existing conditions upon construction completion.

Although the proposed PGEF structure would be one story taller than that of the existing Lathhouse B, the proposed PGEF would be adjacent to similar uses including existing greenhouse and lathhouse facilities to the north, northwest, and south of the project site (refer to **Figure 3**) and therefore would not degrade the existing visual character of the area. Proposed landscaping along the PGEF structure and along the northern, southern, and western portion of the project site would help visually screen the building. There is a large natural slope of more than 20 feet to the east of the site that slopes down into an undeveloped ravine. This area would not be impacted by the proposed project.

C:\2017\17-0385\GIS\Conceptual\_Rendering.mxd; Map created 06 Dec 2018



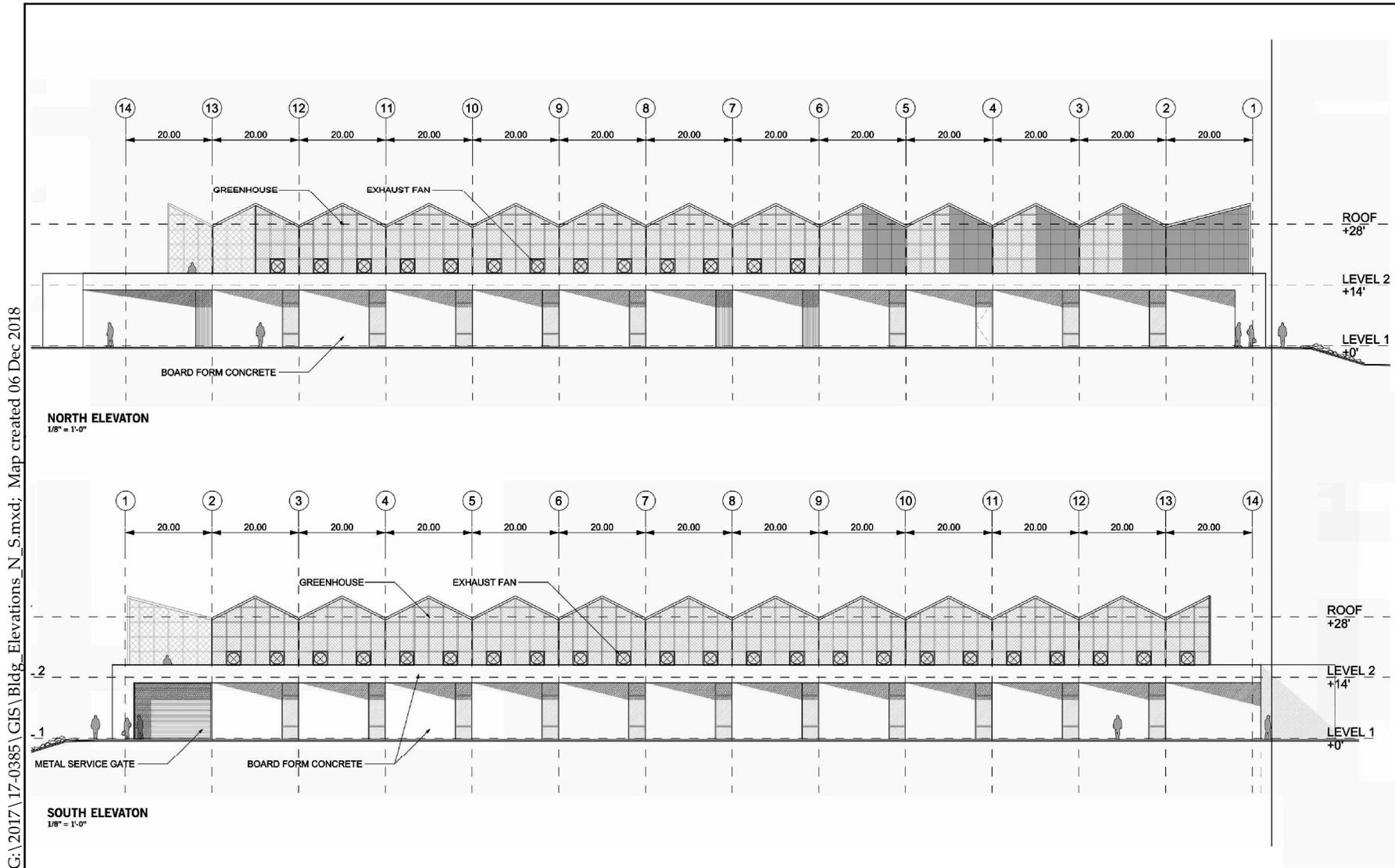
Source: UC Riverside, Oct. 2018.

**Figure 8a - Conceptual Rendering**  
UCR Plant Growth Environments Facility



Not to Scale





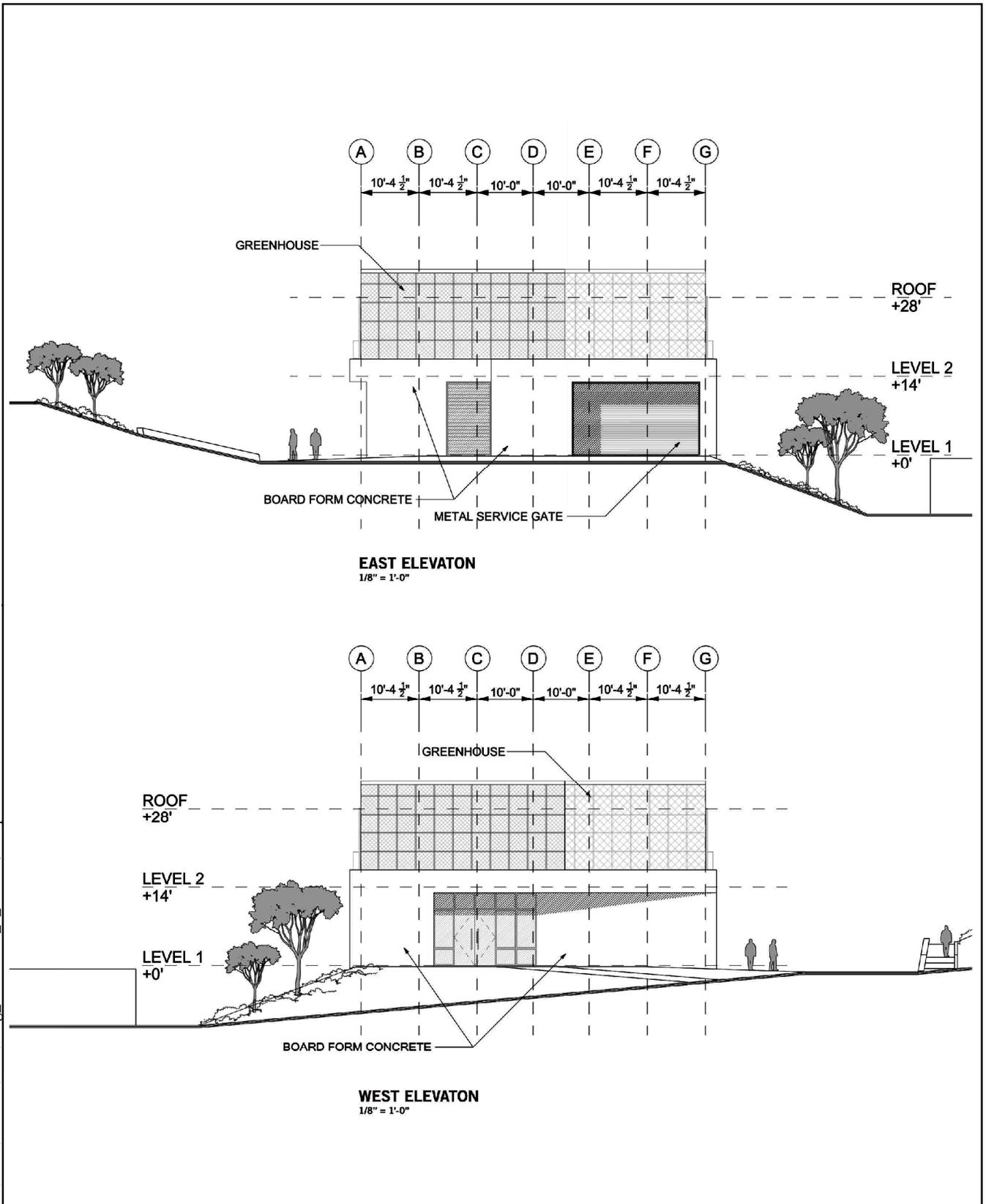
Source: UC Riverside, Oct. 2018.

**Figure 8b - Building Elevations**  
UCR Plant Growth Environments Facility



Not to Scale

C:\2017\17-0385\GIS\Bldg\_Elevations\_E\_W.mxd; Map created 06 Dec 2018



Source: UC Riverside, Oct. 2018.

**Figure 8c - Building Elevations**  
UCR Plant Growth Environments Facility



Not to Scale

As discussed above, PSs and PPs relevant to project design and visual character have been incorporated into the proposed project. The building materials and color palette to be used would adhere to the Campus Design Guidelines to be visually harmonious with the UCR campus as well as the immediately surrounding buildings (as required by PP 4.1-1) and would be reviewed as part of the project-specific design review process and through approval of construction documents (refer to MM 4.1-3(a)).

Furthermore, existing landscaping, primarily trees and shrubs along the northern, southern, and western portion of the project site, would be removed during demolition activities. Potential impacts to trees are discussed in detail in Section V.4, Biological Resources, of this IS/MND. The proposed project includes PP 4.1-2(a), which ensures that project-specific landscape plans are consistent with the Campus Design Guidelines with respect to, among other items, retention of existing trees. In addition, the proposed project incorporates PP 4.1-2(b) and would preserve certain mature trees in place or plant replacement trees within the project site.

In summary, the proposed project and landscaping have been designed in consideration of the Campus Design Guidelines (PPs 4.1-1 and 4.1-2(a)) and would be subject to design review by the Campus Design Review Board (PS Development Strategy 1). The height, massing, site design, materials, and other aspects of the visual character of the proposed project would be consistent with and complementary to the existing surrounding structures and uses and would not degrade the existing visual quality of the project site and surroundings consistent with the findings of the 2005 LRDP EIR. The proposed project would provide a contemporary plant growth facility that meets the requirements of a high-level research university. There would be a less than significant impact with incorporation of PS Development Strategy 1, PP 4.1-1, PP 4.1-2(a), PP 4.1-2(b), and MM 4.1-3(a), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not substantially degrade the existing visual character or quality of the site and its surroundings. The proposed project impacts would be less than significant with the incorporation of the PS, PPs, and MM noted above and were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.1-3 in the 2005 LRDP EIR concluded that implementation of PS Open Space 1, PS Open Space 3, PS Development Strategy 1, PP 4.1-1, PP 4.1-2(a), PP 4.1-2(d), and MM4.1-3(a) would ensure that light and glare impacts on adjacent land uses resulting from development under the 2005 LRDP would be reduced or avoided, resulting in a less than

significant impact.

The 2005 LRDP EIR identifies that the primary sources of light and glare on the UCR campus include recreation facilities and surface parking lots. There are no recreation facilities or surface parking lots immediately adjacent to the project site. Parking Lot 9, Parking Lot 11, and Parking Lot 41 are located south, west, and north of the project site but are intervened by existing greenhouse structures. Other light sources in and surrounding the project site include, but are not limited to, exterior lighting at existing buildings, lighting on campus streets and lighting along pedestrian pathways.

The proposed project is at the central area of the East Campus and is adjacent to an open space area to the east. The lighting design would provide sufficient lighting to ensure visual performance and safety. As described in Section II, Project Description, of this IS/MND, the quantity of lighting would be determined by adherence to recommended illuminance levels derived from the latest industry standards and Campus Design Guidelines and any applicable code requirements. The lighting control system would provide time-based, sensor-based, and manual lighting control. Outdoor lighting would include the lighting of vehicular access and parking, and walkways. Emergency/night lighting would be provided by switched and unswitched branch circuits fed from an emergency lighting panel. Exit signs and emergency egress lighting would be provided throughout the facility to illuminate egress corridors, stairwells, etc.

Based on the level of lighting currently present on and near the project site and the existing level of ambient nighttime illumination at the UCR campus, the proposed project would not noticeably increase the intensity of nighttime ambient light from the campus. Therefore, the lighting associated with the proposed project would not adversely affect any existing land uses, which are not considered light-sensitive (such as residential uses and open space areas).

The proposed project also incorporates MM 4.1-3(a) to ensure there is no glare from the proposed project. Building materials for the proposed project comply with the UCR Design Guidelines, and exterior finishes would include but not be limited to board form concrete, metal, aluminum, and glass.

Implementation of PS Development Strategy 1 (design review), PP 4.1-1 (design in compliance with the Campus Design Guidelines), and MM 4.1-3(a) (use of non-reflective building materials), as part of the proposed project, would ensure that impacts are less than significant. The proposed project would not result in a substantial new source of light or glare, and there would be less than significant impacts related to new sources of daytime or nighttime light and glare with incorporation of PS Development Strategy 1, PP 4.1-1, and MM 4.1-3(a), consistent with the findings of the LRDP EIR.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

The proposed project would not create new source of substantial light or glare which would adversely affect day or nighttime views in the area. The proposed project impacts would be less than significant with the incorporation of the PS, PP, and MM noted above and were adequately addressed in the LRDP EIR.

## 2. AGRICULTURAL AND FORESTRY RESOURCES

The analysis of agricultural and forestry resources is tiered from the 2005 LRDP Amendment 2 EIR and was addressed in Section 4.2, Agricultural Resources, of that document. There are no relevant elements of the proposed project related to agricultural or forestry resources, and no PSs, PPs, or MMs are applicable. There are no agricultural or forestry resources on or adjacent to the project area.

### Project Impact Analysis

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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 non-agricultural use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### *Discussion*

The analysis of Impact 4.2-1 in Section 4.2, Agricultural Resources, of the 2005 LRDP Amendment 2 EIR concluded that, even with implementation of PS Land Use 1, PS Land Use 2, and PS Land Use 3, development under the 2005 LRDP, as amended, would result in a significant and unavoidable impact due to conversion of Prime Farmland to non-agricultural uses.

The 2005 LRDP Amendment 2 EIR identified the distribution of Farmland, as designated by the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), on the UCR campus at that time. The UCR campus was mapped as having 481.7 acres of Prime Farmland and Farmland of Statewide Importance (collectively, “Farmland”) primarily located on the West Campus with an isolated area of Farmland of Statewide Importance located along the eastern boundary of the East Campus. Review of the 2016 Important Farmland Map indicates a similar distribution of Farmland, primarily on the West Campus with an isolated area

near the eastern boundary of the East Campus (DOC 2017). The project area is designated as Urban Built-Up Land and, as such, implementation of the proposed project would not convert Farmland to non-agricultural resources (DOC 2017). Therefore, the proposed project would have no impact on agricultural resources.

As identified in the IS prepared for, and summarized in, the 2005 LRDP Amendment 2 EIR, no portion of the UCR campus is zoned for forest land, timberland, or agricultural use; it does not contain any forest land or timberland, nor is it under a Williamson Act Contract. Therefore, implementation of the proposed project would result in no impacts related to conflict with existing zoning for forest land, timberland, or agriculture; it would not conflict with a Williamson Act Contract; and it would not result in the loss or conversion of forest lands, consistent with the findings of the 2005 LRDP Amendment 2 EIR.

Implementation of the proposed project would not involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use. Therefore, the proposed project would result in no impacts related to indirect conversion of Farmland to non-agricultural use, consistent with the findings of the LRDP EIR.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

There would be no impacts to Farmland, forest land, timberland, or Williamson Act Contracts. The proposed project impacts were adequately addressed in the LRDP EIR.

### **3. AIR QUALITY**

The analysis of air quality is tiered from the 2005 LRDP Amendment 2 EIR and was addressed in Section 4.3, Air Quality, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to air quality include the demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet; removal of asphalt and concrete pavement throughout the project site; removal of walls, removal of gutter, removal of utilities; and removal of landscape along the northern, southern, and western portion of the project site. The project expects to grade the entire site and export approximately 1,210 cubic yards of soil/debris. The proposed project would include construction of a 2-story, approximately 38,000 gsf, approximately 33-foot high, cast-in-place concrete PGEF structure.

Under existing conditions, the Lathhouse B facility and plant growth houses are accessible during typical campus business hours, Monday through Friday from about 8:00 AM to 5:00 PM. Restricted access is available outside of these hours based on research activity needs. The same hours of operation would occur with implementation of the proposed project.

Currently, there are typically eight to 10 research teams (including faculty and students) utilizing the Lathhouse B facility and plant growth houses. The teams use the facility intermittently for set-up, maintenance, and break-down of research activity, with a maximum of 10 personnel working actively within the space at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the

space at any given time. Therefore, there would be a potential increase of 20 personnel which could be new personnel to campus.

The following applicable PSs, PPs, and MMs were adopted as part of the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR; they are incorporated as part of the proposed project and are assumed in the analysis presented in this section.

**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 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].)*

**MM 4.3-1(a)**

For each construction project on the campus, the project contractor will implement Programs and Practices 4.3-2(a) and 4.3-2(b). In addition, the following PM-10 and PM-2.5 control measure shall be implemented for each construction project:

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

**MM 4.3-1(b)**

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

certified equipment or better for all on-site construction equipment according to the following schedule:

- January 1, 2011 to December 31, 2011: All off-road diesel-powered construction equipment greater than 50hp shall meet Tier 2 off-road emissions standards. In addition, all construction equipment shall be outfitted with the BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 2 or Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.<sup>3</sup>
- January 1, 2012 to December 31, 2014: All off-road diesel-powered construction equipment greater than 50 hp shall meet Tier 3 off-road emissions standards. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.<sup>4</sup>
- Post January 1, 2015: All off-road diesel-powered construction equipment greater than 50 hp shall meet the Tier 4 emission standards, where available. In addition, all construction equipment shall be outfitted with BACT devices certified by CARB. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations.
- A copy of each unit's certified specification, BACT documentation and CARB or SCAQMD operating permit shall be provided at the time of mobilization of each applicable unit or equipment.

Encourage construction contractors to apply for AQMD "SOON" funds. Incentives could be provided for those construction contractors who apply for AQMD "SOON" funds. The "SOON" program provides funds to accelerate

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<sup>3</sup> The timeframe for this component of MM 4.3-1(b) has passed and the more restrictive requirements defined are applicable.

<sup>4</sup> Although the time frame for this component has passed, the use of Tier 3 equipment is required where Tier 4 equipment is not available.

clean-up of off-road diesel vehicles, such as heavy duty construction equipment. More information on this program can be found at the following website: <http://www.aqmd.gov/tao/implementation/soonprogram.htm>.

The contractor shall also implement the following measures during construction:

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

**MM 4.3-1(c)**

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

- Construct or build with materials that do not require painting, or use pre-painted construction materials.
- If appropriate materials are not available or are cost-prohibitive, use low VOC-content materials more stringent than required under SCAQMD Rule 1113.

**MM 4.3-2(b)**

UCR shall continue to participate in greenhouse gas (GHG)

reduction programs such as the American College and University Presidents' Climate Commitment (ACUPCC) and shall adhere to the UC Policy on Sustainable Practices. The measures adopted by UCR are presented in Tables 4.16-9 and 4.16-10 in Section 4.16 Greenhouse Gas Emissions of the 2005 LRDP Amendment 2 EIR. While these measures are typically targeted at GHG emissions, many act to reduce energy consumption and vehicle use on campus and would consequently also reduce air pollutant emissions from both area and mobile sources. In accordance with the ACUPCC and the UC Policy on Sustainable Practices and through implementation of its Climate Action Plan, UCR shall commit to reducing GHG emissions to 1990 levels by 2020, which would require significant reductions (on the order of 70 percent) from these sources in terms of GHG and therefore reductions in other air pollutants as well.

### ***Regulatory Framework***

A detailed discussion of the regulatory framework for air quality is provided in Section 4.3 of the 2005 LRDP Amendment 2 EIR. In summary, both the Federal and State governments have established ambient air quality standards for outdoor concentrations of specific pollutants, referred to as “criteria pollutants”, in order to protect public health. The national and State ambient air quality standards have been set at concentration levels to protect the most sensitive persons from illness or discomfort; these levels are given with a margin of safety. The criteria pollutants for which Federal standards have been promulgated and that are most relevant to this air quality impact analysis are ozone (O<sub>3</sub>), carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), and particulate matter (PM-10 and PM-2.5). Particulate matter less than 10 microns in size is referred to as PM-10 and particulate matter less than 2.5 microns in size is referred to as PM-2.5. O<sub>3</sub> is a gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NO<sub>x</sub>) – both byproducts of internal combustion engine exhaust – undergo slow photochemical reactions in the presence of sunlight. Thus, VOCs and NO<sub>x</sub> are O<sub>3</sub> precursors.

The campus is located within the South Coast Air Basin (SCAB), which was named as such since 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 South Coast Air Quality Management District (SCAQMD) is responsible for ensuring that the SCAB meets the national and State ambient air quality standards.

Subsequent to the preparation of the air quality study for the 2005 LRDP Amendment 2 EIR, there have been changes to the attainment status in the SCAB. These changes include Federal designation of the SCAB as a PM-10 attainment area and Federal designation of Los Angeles County as a nonattainment area for lead. Since the proposed project would not involve the use or production of leaded gasoline, or other sources of lead emissions, this criteria pollutant is not expected to be a factor with project implementation and isn't discussed further in this IS/MND. The current Federal and State attainment designations are shown in **Table 3-1 – Attainment Status of Criteria Pollutants in the SCAB**.

**Table 3-1 – Attainment Status of Criteria Pollutants in the SCAB**

Pollutant	State	Federal
O <sub>3</sub> (1 hour)	Nonattainment	No Standard
O <sub>3</sub> (8 hour)		Extreme Nonattainment
PM-10	Nonattainment	Attainment
PM-2.5	Nonattainment	Nonattainment
CO	Attainment	Unclassified/Attainment
NO <sub>2</sub>	Attainment	Unclassified/Attainment
SO <sub>2</sub>	Attainment	Attainment
Lead	Attainment	Attainment/Nonattainment*

Source: CARB 2017.

Notes:

SCAB – South Coast Air Basin; O<sub>3</sub> – Ozone; PM-10 – Particulate matter 10 micrometers or less in diameter; PM-2.5 – Fine particulate matter 2.5 micrometers or less in diameter; CO – Carbon Monoxide; NO<sub>2</sub> – Nitrogen Dioxide; SO<sub>2</sub> – Sulfur Dioxide.

\* The Los Angeles County portion of the South Coast Air Basin (SCAB) is designated nonattainment for lead; the remainder of the SCAB is designated attainment.

In December 2012, the SCAQMD adopted the 2012 Air Quality Management Plan (AQMP), which is a regional and multiagency effort (SCAQMD, California Air Resources Board (CARB), Southern California Association of Governments (SCAG), and the U.S. Environmental Protection Agency USEPA)). The 2012 AQMP incorporated the latest scientific and technical information and planning assumptions, including SCAG’s 2012–2035 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS); updated emission inventory methods for various source categories; and SCAG’s latest growth forecasts. The primary purposes of the 2012 AQMP was to demonstrate attainment of the Federal 24-hour PM-2.5 standard by 2014 and to update the USEPA-approved 8-hour Ozone Control Plan. On December 20, 2012, the 2012 AQMP was submitted to CARB and the USEPA for concurrent review and approval for inclusion in the State Implementation Plan (SIP). CARB approved the 2012 AQMP on January 25, 2013 (CARB 2018).

SCAQMD updated its AQMP for the SCAB in 2016, which included a new approach focusing on available, proven, and cost effective alternatives to traditional strategies, while seeking to achieve multiple goals in partnership with other entities promoting reductions in greenhouse gases and toxic risk, as well as efficiencies in energy use, transportation, and goods movement. The most effective way to reduce air pollution impacts on the health of the nearly 17 million residents within the SCAB, including those in disproportionately impacted and environmental justice communities that are concentrated along transportation corridors and goods movement facilities, is to reduce emissions from mobile sources, the principal contributor to air quality challenges within the SCAB. For that reason, the SCAQMD has been and would continue to be closely engaged with CARB and the USEPA who have primary responsibility for these sources. The 2016 AQMP recognized the critical importance of working with other agencies to develop funding and other incentives that encourage the accelerated transition of vehicles, buildings, and industrial facilities to cleaner technologies in a manner that benefits not only air quality, but also local businesses and the regional economy. These “win-win” scenarios are key to implementation of the 2016 AQMP with broad support from a wide range of stakeholders. The 2016 AQMP includes integrated strategies and measures to meet the National Ambient Air Quality Standards (NAAQS).

The SCAG assists by preparing the transportation portion of the AQMP. This includes the preparation of a SCS that responds to planning requirements of Senate Bill 375 and demonstrates

the region’s ability to attain greenhouse gas reduction targets set forth in state law. The SCS identifies regional and local efforts to promote new housing and employment in high-quality transit areas that would support development patterns that complement the evolving transportation network. The SCS was incorporated into the 2016 Regional Transportation Plan, adopted by SCAG on April 7, 2016. The AQMP for the SCAB establishes a program of rules and regulations directed at attainment of the State and national air quality standards. Ultimately, a project’s operational cumulative impact is judged against its consistency with the applicable AQMP. Conformance with the AQMP for development projects is determined by demonstrating compliance with local land use plans.

***Air Quality Sensitive Receptors***

The SCAQMD defines typical sensitive receptors as residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The project site is not located within a K-12 school; however, the UCR East Campus area is surrounded by existing greenhouse and lathhouse facilities to the north, northwest, and south; and open space to the east. Since the project site is located within UCR, the analysis in the IS/MND has assumed the nearest campus structure as the “sensitive receptor” for purposes of air quality impacts analysis. As such, the nearest campus structure is located 20 feet south of the project site. Potential impacts to sensitive receptors from construction emissions are assessed under the analysis of Threshold d below.

***Methods***

The SCAQMD recommends that projects be evaluated in terms of their quantitative thresholds, which have been established to assess both the regional and localized impacts of project-related air pollutant emissions. The significance thresholds are updated, as needed, to appropriately represent current ambient air quality standards and attainment status. As identified in Section 4.3.4, Impacts and Mitigation Measures, of the 2005 LRDP Amendment 2 EIR, UCR utilizes the SCAQMD-recommended thresholds that are in place at the time development projects are proposed in order to assess the significance of quantifiable emissions. The current SCAQMD thresholds are identified in **Table 3-2 – SCAQMD CEQA Regional Significance Thresholds** and are applied to the proposed project.

**Table 3-2 – SCAQMD CEQA Regional Significance Thresholds**

<b>Emission Threshold</b>	<b>Units</b>	<b>VOC</b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>x</sub></b>	<b>PM-10</b>	<b>PM-2.5</b>
Construction	lbs/day	75	100	550	150	150	55
Operations	lbs/day	55	55	550	150	150	55

Source: SCAQMD 2015.

Note: lbs/day – pounds per day; VOC – Volatile Organic Compounds; NO<sub>x</sub> – Nitrogen Oxides; CO – Carbon Monoxide; SO<sub>x</sub> – Sulfur Oxides; PM-10 – Particulate matter less than 10 microns in size; PM-2.5 – Particulate matter less than 2.5 microns in size.

## Project Impact Analysis

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### *Discussion*

The analysis of Impact 4.3-6 in the 2005 LRDP Amendment 2 EIR concluded that, even with implementation of PS Land Use 4 and 5, PS Transportation 1 through 6, and MM 4.3-6 (which implements MM 4.3-1 and MM 4.3-2(b)), development under the 2005 LRDP would likely conflict with SCAQMD AQMPs for O<sub>3</sub> and particulate matter (PM), and there would be a significant and unavoidable impact. This conclusion was based on the forecasted construction emissions that exceed SCAQMD CEQA significance mass daily thresholds for VOC, NO<sub>x</sub>, and PM-10 and operational emissions that exceed the mass daily thresholds for VOC, NO<sub>x</sub>, PM-10, and PM-2.5.

The two principal criteria for conformance to the AQMP are whether (1) the project would result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations or delay timely attainment of air quality standards and (2) whether the project would exceed the assumptions in the AQMP (SCAQMD 1993).

With respect to the first criterion, with incorporation of the identified PSs, PPs, and MMs, the forecasted proposed project construction and operational emissions, as detailed in Threshold b, would not exceed the SCAQMD CEQA significance mass daily thresholds, which demonstrates that the proposed project would not result in a long-term increase in the frequency or severity of existing regional air quality violations; cause or contribute to new violations; or delay timely attainment of air quality standards. With respect to the second criterion, the increase in faculty and staff to accommodate a student population of 25,000 was anticipated in the 2005 LRDP. As stated in Section 4.9 of the 2005 LRDP Amendment 2 EIR, “The projected growth in campus population by 2020 is within the SCAG projections for the City of Riverside. Therefore, the 2005 LRDP population increase would be consistent with AQMP attainment forecasts”. The current 2016 AQMP would have included the projected growth associated with the 2005 LRDP, including the increase in population resulting from the proposed project (potential increase of 20 personnel from existing conditions). The potential increase of 20 personnel is considered a negligible increase when considering pollutant emissions. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. Additionally, the project site is in an area designated as “Academic” which allows for the development of the proposed project. Consequently, because the proposed project is consistent with the land use designation in the 2005 LRDP Amendment 2, employment and population estimates associated with implementation of the proposed project would have been accounted for in SCAG’s RTP/SCS. Therefore, the proposed project would not exceed the assumptions in the 2016 AQMP. Based on these criteria, it is concluded that the proposed project would not conflict with or obstruct the SCAQMD AQMP; there would be no impact, consistent with the findings in the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not conflict with or obstruct implementation of the applicable air quality plans; there would be no impact. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Would the Project violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.3-1 and 4.3-2 in the 2005 LRDP Amendment 2 EIR concluded that, even with implementation of PP 4.3-1, PP 4.3-2(a), PP 4.3-2(b), MM 4.3-1(a) through MM 4.3-1(c), MM 4.3-2(a), and MM 4.3-2(b), development under the 2005 LRDP could result in significant and unavoidable impacts related to:

- Construction emissions of VOC, NO<sub>x</sub>, and PM-10 (Impact 4.3-1) and
- Operational emissions of VOC, NO<sub>x</sub>, CO, PM-10, and PM-2.5 (Impact 4.3-2).

The following is an analysis of the short-term construction-related and long-term operational emissions that would result from implementation of the proposed project.

**Construction Activities**

Short-term emissions from project construction were evaluated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2 program. The estimated construction period for the proposed project is approximately 13 months, beginning no sooner than April 2019. The default parameters within CalEEMod were used and these default values reflect a worst-case scenario, which means that project emissions are expected to be equal to or less than the estimated emissions. In addition to the default values used, assumptions relevant to model inputs for short-term construction emission estimates used include the following:

- Construction is anticipated to begin in approximately April 2019 with demolition and end with architectural coating by approximately June 2020.
- The anticipated construction equipment to be used for each construction phase is shown in **Table 3-3 – Anticipated Construction Equipment Used During Project Construction**. Each piece of equipment is assumed to operate 8 hours per day:

**Table 3-3 – Anticipated Construction Equipment Used During Project Construction**

<b>Construction Activity</b>	<b>Off-Road Equipment</b>	<b>Unit Amount</b>
Demolition	Concrete/Industrial Saws	1
	Rubber Tired Dozers	1
	Tractors/Loaders/Backhoes	1
Grading	Concrete/Industrial Saws	1
	Rubber Tired Dozers	1
	Tractors/Loaders/Backhoes	2
Building Construction	Cranes	1
	Forklift	2
	Tractors/Loaders/Backhoes	2
Paving	Cement and Mortar Mixer	4
	Paving Equipment	1
	Rollers	1
	Tractors/Loaders/Backhoes	1

Source: CalEEMod (Appendix A) and input from UCR.

- To evaluate project compliance with SCAQMD Rule 403 for fugitive dust control, the project utilized the mitigation option of watering the project site three times daily which achieves a control efficiency of 61 percent for PM-10 and PM-2.5 emissions. Two (2) one-way vendor trips were added to the demolition, grading and paving activity to account for water truck trips. This is consistent with PP 4.3-2(b) and MM 4.3-1(a).
- Compliance with SCAQMD Rules is required and included as part of the proposed project (PP 4.3-2[a] and MM 4.3-1[a]).
- Approximately 13,106 square feet of existing structures would be demolished.
- Approximately 1,210 cubic yards of soil would be exported during grading operations. Truck capacity is assumed to be 16 cubic yards, resulting in approximately 76 truckloads of import over a 7 day period, or approximately 11 truckloads per day. The CalEEMod default haul truck trip length of 20 miles was used.
- The fire lane and service driveway would be constructed of permeable pavement and concrete; no asphalt is proposed.
- The architectural coating would be applied using airless sprayers. Construction would be performed in accordance with Rule 1113, Architectural Coatings, consistent with MM 4.3- 1(c)).

Project-specific air quality impact analysis was conducted for the proposed project, since the 2005 LRDP did not provide this level of detail (Appendix A). The results of this air quality impact analysis are summarized in **Table 3-4 Estimated Maximum Daily Construction Emissions**.

**Table 3-4 – Estimated Maximum Daily Construction Emissions**

Activity	Peak Daily Emissions (lb/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM-10	PM-2.5
<b>SCAQMD Daily Construction Thresholds</b>	<b>75</b>	<b>100</b>	<b>550</b>	<b>150</b>	<b>150</b>	<b>55</b>
2019 Demolition	1.91	19.80	10.87	0.02	1.70	1.06
2019 Grading	2.25	<b>26.17</b>	13.78	<b>0.04</b>	<b>4.10</b>	<b>2.52</b>
2019 Building Construction	1.42	14.63	10.32	0.02	1.07	0.81
2020 Building Construction	<b>1.28</b>	13.18	<b>9.97</b>	0.02	0.96	0.71
2020 Paving	<b>0.96</b>	8.06	<b>8.70</b>	0.02	0.65	0.46
2020 Architectural Coatings	<b>44.63</b>	0.01	<b>0.16</b>	0.00	0.01	0.01
<b>Maximum<sup>1</sup></b>	<b>46.87</b>	<b>26.17</b>	<b>18.83</b>	<b>0.04</b>	<b>4.10</b>	<b>2.52</b>
<b>Exceeds Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod (Appendix A).

Note: <sup>1</sup> Maximum emissions are the greater of demolition, grading or building construction in 2019 alone, or the greater of the sum of building construction, paving and architectural coating in 2020 since these activities overlap. Maximum emissions are shown in **bold**.

As shown in the table above, the emissions from construction of the project are below the SCAQMD daily construction thresholds for all the criteria pollutants. Nonetheless, the project contractor would incorporate PP 4.3-2(a) and MM 4.3-1(b) in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR as standard construction practice to further reduce air quality impacts to the extent feasible. Therefore, air quality impacts during construction activities are considered to be less than significant with incorporation of PP 4.3-2(a), PP 4.3-2(b), MM 4.3-1(a), MM 4.3-1(b), and MM 4.3-1(c) consistent with the findings of the LRDP EIR.

Operational Activities

Long-term operational emissions are evaluated at build-out of a project. The proposed project is assumed to be operational in 2020. Mobile source emissions refer to on-road motor vehicle emissions generated from the project’s traffic and are based on the new personnel projections. Implementation of the proposed project is estimated to increase 20 personnel from existing conditions. For a worst case air quality analysis, 20 personnel are conservatively estimated to be new personnel of the campus and each personnel would make two trips per day to and from campus.

Area source emissions from the proposed project include stationary combustion emissions of natural gas used for space and water heating (shown in a separate row as energy), yard and landscape maintenance, consumer use of solvents and personal care products, and an average building square footage to be repainted each year. CalEEMod computes area source emissions based upon default factors and land use assumptions. Separate emissions were computed for both the summer and winter as depicted in **Table 3-5 - Estimated Daily Project Operations Emissions (Summer)** and **Table 3-6 – Estimated Daily Project Operation Emissions (Winter)**.

**Table 3-5 – Estimated Daily Project Operation Emissions (Summer)**

Source	Peak Daily Emissions (lb/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM-10	PM-2.5
<b>SCAQMD Daily Thresholds</b>	<b>55</b>	<b>55</b>	<b>550</b>	<b>150</b>	<b>150</b>	<b>55</b>
Area	0.86	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.04	0.03	0.00	0.00	0.00
Mobile	0.09	0.65	1.13	0.00	0.32	0.09
<b>Total</b>	<b>0.95</b>	<b>0.69</b>	<b>1.16</b>	<b>0.00</b>	<b>0.32</b>	<b>0.09</b>
<b>Exceeds Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod (Appendix A).

Note: Emissions reported as zero are rounded and not necessarily equal to zero.

**Table 3-6 – Estimated Daily Project Operation Emissions (Winter)**

Source	Peak Daily Emissions (lb/day)					
	VOC	NO <sub>x</sub>	CO	SO <sub>2</sub>	PM-10	PM-2.5
<b>SCAQMD Daily Thresholds</b>	<b>55</b>	<b>55</b>	<b>550</b>	<b>150</b>	<b>150</b>	<b>55</b>
Area	0.86	0.00	0.00	0.00	0.00	0.00
Energy	0.00	0.04	0.03	0.00	0.00	0.00
Mobile	0.08	0.66	0.98	0.00	0.32	0.09
<b>Total</b>	<b>0.94</b>	<b>0.70</b>	<b>1.01</b>	<b>0.00</b>	<b>0.32</b>	<b>0.09</b>
<b>Exceeds Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod (Appendix A).

Note: Emissions reported as zero are rounded and not necessarily equal to zero.

Evaluation of the data presented in **Table 3-5** and **Table 3-6** indicates that criteria pollutant emissions from operation of this project would not exceed the SCAQMD regional daily thresholds for any pollutant during summer or winter. Furthermore, the proposed project would adhere to the UC Policy on Sustainable Practices (MM 4.3-2(b)) that would reduce air pollutant emissions from both area and mobile sources and comply with the campus' Transportation Demand Management Program (PP 4.3-1). Therefore, air quality impacts during project operations are considered to be less than significant with incorporation of PP 4.3-1 and MM 4.3-2(b), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to violating the SCAQMD pollutant thresholds or contributing substantially to an existing or projected air quality violation with incorporation of the PPs and MMs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Would the Project result in a cumulatively considerable net increase of any criteria pollutant for	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

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### ***Discussion***

The analysis of Impact 4.3-7 in the 2005 LRDP Amendment 2 EIR concluded that, with implementation of MM 4.3-7 (implements MM 4.3-2(b), which would reduce traffic associated with campus operations), development under the 2005 LRDP would result in a less than significant impact related to a cumulatively considerable net increase of pollutants for which the project region is in nonattainment.

The Riverside County portion of the SCAB is a Federal and State nonattainment area for O<sub>3</sub> and PM-2.5 and a State nonattainment area for PM-10. Therefore, cumulative regional emissions of VOCs and NO<sub>x</sub> (which are O<sub>3</sub> precursors) as well as PM-10 and PM-2.5 are addressed in the following analysis of cumulative criteria pollutant emissions (during construction activities and operation of the proposed project).

#### Construction Activities

As identified in Table 4.3-8 of the 2005 LRDP Amendment 2 EIR, construction of the remaining development on campus would include individual projects that would have construction emissions that would exceed the SCAQMD VOC, NO<sub>x</sub>, and PM-10 emissions thresholds in some years. Because of the short duration of peak emissions and the relatively low VOC, NO<sub>x</sub>, and PM-10 emission rates compared to the SCAQMD CEQA significance thresholds (**Table 3-5**), the cumulative contributions to construction emissions on campus from project-related construction emissions would not be considerable, and the impact would be less than significant, consistent with the findings of the LRDP EIR.

#### Operational Activities

The increase in long-term operational emissions of all nonattainment pollutants resulting from the proposed project would be very small relative to SCAQMD CEQA significance thresholds (refer to **Table 3-6 and Table 3-7**) and would not be cumulatively considerable. The impact would be less than significant, consistent with the findings of the LRDP EIR.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

Construction activities and operation of the proposed project would result in a less than significant cumulatively considerable net increase of criteria pollutants for which the proposed project region is in nonattainment under an applicable Federal or State ambient air quality standard (O<sub>3</sub>, PM-10, and PM-2.5). The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Would the project expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.3-3 and 4.3-4 in the 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP would result in a less than significant impact related to exposure of sensitive receptors to substantial concentrations of CO and toxic air contaminants (TACs). Exposure to substantial concentrations of construction emissions is a project-specific and site-specific analysis and was not evaluated in the 2005 LRDP Amendment 2 EIR.

Carbon Monoxide

Exposure of sensitive receptors to CO is of concern if the project contributes substantial traffic to severely congested, high-volume, signalized intersections with an associated potential increase in local CO concentrations (i.e., CO hotspots). With project implementation, there could be a potential increase of up to 20 personnel from existing conditions. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. As such, given the relatively minimal increase in personnel from project implementation, it is anticipated that the minor increase in vehicular trips would not increase delays at any intersections that would operate at level of service (LOS) E or F. Therefore, impacts related to CO hotspot are considered to be less than significant.

Consistent with the conclusion of the LRDP EIR, implementation of the proposed project would not result in exposure of sensitive receptors to substantial concentrations of CO, and there would be no impact. No mitigation is required.

Toxic Air Contaminants

TACs 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. A human health risk assessment (HHRA) was prepared as part of the 2005 LRDP Amendment 2 EIR to estimate the potential off-campus and on-campus health risks associated with TACs generated by current and projected campus-wide operations. The emissions sources analyzed in the HHRA included natural gas combustion sources, boilers and kitchen equipment, gasoline dispensing operations, emergency generators driven by internal combustion engines (ICEs), painting operations, and laboratory fume hoods (chemical usage). The HHRA concluded that full development of the campus under the 2005 LRDP Amendment 2 would not generate toxic air emissions that would result in excess human cancer risk from stationary sources or that would result in a cumulative acute or chronic non-cancer Hazard Index that exceeds the established standards. The proposed project would not add facilities or equipment that would emit TACs. Further, users of the PGEF would not be located closer to known generators of TACs than the maximally exposed individual (MEI) identified in the HHRA. Therefore, implementation of the proposed project would not result in exposure of the additional campus population to substantial concentrations of TACs. The impact would be less than significant, which is consistent with the findings of the LRDP EIR.

### Construction-Source Emissions LST Analysis

The SCAQMD has developed thresholds and methodologies for analyzing the localized air quality effects on a project-specific level. The localized significance thresholds (LST) methodology is a conservative, simple screening methodology for determining impacts to off-site receptors from on-site emissions (SCAQMD 2009). According to the LST methodology, only on-site emissions need to be analyzed. Emissions associated with vendor and worker trips are mobile source emissions that occur off site. The emissions analyzed under the LST methodology are NO<sub>2</sub>, CO, PM-10, and PM-2.5. SCAQMD has provided LST lookup tables<sup>5</sup> to allow users to readily determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts for projects five acres or smaller. The proposed project site is approximately 1.25 acres.<sup>6</sup> Therefore, the one-acre Look-Up Table was used with the on-site emissions estimated by CalEEMod to provide a conservative analysis.

The LST thresholds are estimated using the maximum daily disturbed area (in acres) and the distance of the project site to the nearest sensitive receptors (in meters). UCR is conservatively assumed to be a sensitive use, with receptors adjacent to the project site. The closest corresponding receptor distance on the LST look-up tables is 25 meters (82 feet). As previously noted, the closest campus facility is approximately 20 feet south of the project site. According to LST methodology, projects with boundaries closer than 25 meters to the nearest receptor should use the LSTs for receptors located at 25 meters. Therefore, a receptor distance of 25 meters (82 feet) was used. The results are summarized in **Table 3-7 – LST Results for Daily Construction Emissions**.

**Table 3-7 – LST Results for Daily Construction Emissions**

Pollutant	Peak Daily Emissions (lb/day)			
	NO <sub>x</sub>	CO	PM-10	PM-2.5
<b>LST Threshold for 1 acre at 25 meters</b>	<b>118</b>	<b>602</b>	<b>4</b>	<b>3</b>
2019 Demolition	18.00	10.29	1.48	0.99
2019 Grading	<b>20.34</b>	12.59	<b>3.58</b>	<b>2.36</b>
2019 Building Construction	13.54	9.29	0.79	0.73
2020 Building Construction	12.20	<b>9.04</b>	0.68	0.63
2020 Paving	7.80	<b>7.94</b>	0.43	0.40
2020 Architectural Coating	0.00	<b>0.00</b>	0.00	0.00
<b>Maximum<sup>1</sup></b>	<b>20.34</b>	<b>16.98</b>	<b>3.58</b>	<b>2.36</b>
<b>Exceeds Threshold?</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>

Source: CalEEMod (Appendix A), SCAQMD 2009.

Note: <sup>1</sup> Maximum emissions are the greater of demolition, grading or building construction in 2019 alone, or the greater of the sum of building construction, paving and architectural coating in 2020 since these activities overlap. Maximum emissions are shown in **bold**.

LST – Localized Significance Threshold; lb/day – pounds per day.

<sup>5</sup> <http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds>

<sup>6</sup> <http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/caleemod-guidance.pdf?sfvrsn=2>

Emissions from construction of the proposed project would be below the LST established by SCAQMD for the project. Therefore, impacts are considered to be less than significant, consistent with the findings of the LRDP EIR.

Localized Significance – Long-Term Operational Activities

According to SCAQMD LST methodology, LSTs would apply to the operational phase of a project, if the project includes stationary sources (e.g. flares and turbines) and/or on-site mobile equipment or attracts mobile sources that may spend long periods of time idling at the site, such as warehouse/transfer facilities. The proposed project does not include such uses. Therefore, due to the lack of stationary source emissions or on-site mobile equipment, no long-term LST analysis is needed.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

Construction and operation of the proposed project would have a less than significant impact related to exposure of sensitive receptors to substantial pollutant concentrations. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Would the project create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.3-5 in the 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP would result in a less than significant impact related to objectionable odors.

Construction activities may generate some odors, such as diesel exhaust associated with operations of diesel-fueled construction vehicles/equipment, architectural coatings, and asphalt paving. These odors are typical of urbanized environments and would be subject to construction and air quality regulations, including proper maintenance of machinery to minimize engine emissions. These emissions would occur during daytime hours and would be isolated to the immediate vicinity of construction activities. The odors would be of a relatively small magnitude and short duration and would quickly disperse into the atmosphere. These odors are not pervasive enough to cause objectionable odors affecting a substantial number of people. There would be a less than significant impact.

As identified in the 2005 LRDP Amendment 2 EIR, the campus does not contain any facilities that are considered by the SCAQMD to be odor-emitting. Additionally, the CARB has developed an Air Quality and Land Use Handbook that outlines major common sources of odor complaints, including: sewage treatment plants, landfills, recycling facilities, and petroleum refineries (CARB 2005). The proposed project does not include any such uses as the project includes development of a plant growth environments facility. Therefore, long-term operation of the proposed project would not expose substantial numbers of persons to objectionable odors. In summary, impacts

from construction or operation of the proposed project related to odors would be less than significant, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would create a less than significant impact associated with objectionable odors affecting a substantial number of people. The proposed project impacts were adequately addressed in the LRDP EIR.

**4. BIOLOGICAL RESOURCES**

The analysis of biological resources is tiered from the 2005 LRDP EIR and was addressed in Section 4.4, Biological Resources, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to biological resources include removal and/or replacement of ornamental landscape and vegetation within the project site.

Information in this section is summarized based on the Biological Resources Technical Report prepared for the proposed project by Cadre Environmental (Cadre) and is provided in Appendix B.

The following applicable PPs, PSs, and MMs were adopted as part of the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

- 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.

**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).)*

**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 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 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.

**MM 4.4-4(a)**

Prior to the onset of construction activities that would result in the removal of mature trees that would occur between March and mid-August, surveys 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.

Additionally, PPs 4.1-2(a) and 4.1-2(b) (included under the Aesthetics analysis, which is Section V.1 of this IS/MND) are included in the proposed project. PP 4.1-2(a) requires development of landscape plans that are consistent with the Campus Design Guidelines (including tree retention). PP 4.1-2(b) requires that the campus continue to relocate, where feasible mature “specimen” trees that would be removed as a result of construction activities on the campus.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.4-1 in the 2005 LRDP EIR concluded that, with implementation of PS Open Space 1 through 4, PS Conservation 1 through 3, PP 4.4-1(a), PP 4.4-1(b), MM 4.4-1(a), and MM 4.4-1(b), development under the 2005 LRDP would result in less than significant impacts on candidate, sensitive, and special status plant and wildlife species.

Based on the land use and open space designations defined in the 2005 LRDP, on-campus plant and wildlife resources can be generally described by four biological resource “associations” as follows:

- **Natural** areas are undeveloped open space and are composed 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 Gardens.
- **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.

As identified in the 2005 LRDP EIR, a literature search determined that special status plant and animal species have the potential to occur within Natural and Naturalistic areas of the campus; several sensitive wildlife species and one sensitive plant species were observed within the UCR Botanic Gardens (refer to Tables 4.4-1 and 4.4-2 of the 2005 LRDP EIR). Therefore, development within Natural and Naturalistic areas could result in substantial direct and indirect (e.g., removal of foraging habitat) adverse impacts on candidate, sensitive, and/or special status species. The distribution of the campus' Natural and Naturalistic areas is shown on Figure 4.4-1, Existing Campus Biological Resources, of the 2005 LRDP EIR. This association is limited to drainage channels or arroyos, Picnic Hill, and the Botanic Gardens.

As shown on Figure 13a of the 2005 LRDP Amendment 2 and shown on **Figure 2**, the project site is located within the "Academic" land use designation (consistent with PS Conservation 3 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR). However, Figure 22 of the 2005 LRDP Amendment 2, in error, defines this area in the Open Space Framework as "Naturalistic Open Space." This Naturalistic Open Space is located to the east of the project site where an unnamed drainage feature begins immediately east of the project site, whose flow line is located approximately 54 feet east of the project site. The unnamed drainage is dominated by native vegetation, and the drainage flow line is dominated by non-native grassland vegetation and drains approximately 170 feet northeast of the project site into the Detention Basin (see **Figure 9 – Detention Basin and Drainage Feature**). The proposed project would avoid the open space area immediately east of the project site and would thus avoid the unnamed drainage feature and native vegetation.

C:\2017\17-0385\GIS\Arroyo\_Drainage.mxd; Map revised 08 Feb 2019



Source: Cadre Environmental, Feb. 2019.

**Figure 9 - Detention Basin and Drainage Feature**

UCR Plant Growth Environments Facility



Not to Scale

The project site is completely developed/disturbed and/or characterized as ornamental/exotic landscaping (see **Figure 10 – Vegetation Communities Map**). The project site is developed with the Lathhouse B, four plant growth glasses houses, the arabidopsis plant growth house, metal shed, compost toilet, and paved areas on approximately 0.81 acre of the site. The perimeter of the project site is dominated by 0.40-acre of ornamental landscaped/exotic shrubs and trees. Species documented onsite include but are not limited to Eucalyptus (*Eucalyptus sp.*), Peruvian pepper trees (*Schinus molle*), Brazilian pepper trees (*Schinus terebinthifolia*), simple-leaved pepper tree (*Schinus polygamous*), cape honeysuckle (*Tecomaria capensis*), common fig (*Ficus palmata*), lantana (*Lantana camara*), blue plumbago (*Plumbago auriculata*), and baby sun rose (*Aptenia cordifolia*). A small 0.04-acre patch of disturbed vegetation is located adjacent to the southern portion of the site. This vegetation community is generally devoid of vegetation with the exception of scattered ruderal non-native plant species documented onsite including London rockets (*Sisymbrium irio*), horehound (*Marrubium vlgare*), common sow thistle (*Sonchus oleraceus*), tree tobacco (*Nicotiana glauca*), and non-native grasses. No undeveloped, native habitats, native trees, drainages, or arroyos are located within the project site.

General wildlife species documented onsite or within the vicinity during the site assessment include but are not limited to mourning dove (*Zenaida macroura*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), common starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), song sparrow (*Melospiza melodia*), and house finch (*Haemorhous mexicanus*). Additionally, the project site was assessed by Cadre to determine the potential for 23 sensitive wildlife species known to or potentially to occur onsite as noted in Table 4.4-2 of the 2005 LRDP EIR.

The construction of the PGEF project would be located on previously developed/disturbed areas. Based on the site assessment, Cadre concluded none of the wildlife species have the potential to occur on site except Cooper's hawk (*Accipiter cooperii*) (Appendix B). The eucalyptus trees within and immediately adjacent to the southeast project site represents potential nesting habitat for Cooper's hawk (*Accipiter cooperii*) (see **Figure 10**). It is anticipated that the eucalyptus trees in this area would be removed for the proposed hammerhead driveway associated with the vehicular access plan for the project. Standard required compliance with the federal Migratory Bird Treaty Act (MBTA) would be required related to the removal of the ornamental eucalyptus trees.

As analyzed in the 2005 LRDP EIR, 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. However, implementation of the 2005 LRDP, including the proposed project, could still result in the removal of trees and other vegetation that may serve as perching or nesting sites of migratory birds or raptors. This would constitute substantial interference (take or destruction) with a raptor or migratory species of special concern. Therefore, the proposed project incorporates MM 4.4-4(a), which requires a pre-construction survey for nesting special status avian species and raptors, and MM 4.4-4(b), which requires that exterior construction activities be delayed within the construction footprint or a 250-foot buffer zone until the young have fledged or appropriate MMs responding to the specific situation have been developed and implemented in consultation with U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW).



Source: Cadre Environmental, June 2018.

**Figure 10 - Vegetation Communities Map**  
UCR Plant Growth Environments Facility



Not to Scale

Because the proposed project incorporates all relevant MMs and would be required to comply with the MBTA, impacts on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulation by the CDFW or by the USFWS would be less than significant with incorporation of PS Conservation 3, MM 4.4-4(a), and MM 4.4-4(b), consistent with the findings of the LRDP EIR. Additional Project-Level Mitigation Measures

None required.

**Level of Significance**

The proposed project would have less than significant impacts to candidate, sensitive, or special status plant or wildlife species with incorporation of the PS and MMs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impact 4.4-2 in the 2005 LRDP EIR concluded that there would be less than significant impacts to the on-campus portion of the USFWS-designated critical habitat area for coastal California gnatcatcher (*Poliophtila californica californica*) and on the riparian habitat within the existing arroyos on campus with implementation of PS Open Space 1 through 3, PS Conservation 1, PP 4.4-1(a), PP 4.4-1(b), PP 4.4-2(a), PP 4.4.2(b), MM 4.4-1(a), and MM 4.4-1(b).

Based on review of Figure 4.4-1, Existing Campus Biological Resources, of the 2005 LRDP EIR, the proposed project does not involve any development within the designated critical habitat for the coastal California gnatcatcher, and the project area is not traversed by an existing arroyo or other drainage feature. The closest drainage feature is an unnamed drainage whose flow line is located approximately 54 feet east of the project site. The unnamed drainage, whose flow line is dominated by non-native grassland vegetation drains approximately 170 feet northeast of the project site into the Detention Basin (see **Figure 9**). Development of the PGEF project, hammerhead driveway, and on-site improvements would be within previously developed/disturbed area or ornamental/exotic landscaped areas and thus would be located out of any nearby drainage, drainage flow line, or the Detention Basin. Further, there was no riparian or wetland habitat identified on the project site by Cadre during the site assessment (Appendix B). The proposed project would avoid the open space area immediately east of the project site noted as No Impact Zone on **Figure 5**; thus, the proposed project would comply with PS Conservation 1, PS Open Space 1, PS Open Space 3, and PP 4.4-1(b) noted in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR because the natural open space areas would not be disturbed or impacted. Therefore, the proposed project does not have the potential to impact riparian or other sensitive natural communities that may occur in these areas. Impacts are considered to be less than

significant with incorporation of PS Conservation 1, PS Open Space 1, PS Open Space 3, and PP 4.4-1(b), consistent with the findings of the LRDP EIR..

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impacts on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations by the CDFW or the USFWS with incorporation of the PSs and PP noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As identified in Section 4.4, Biological Resources, of the 2005 LRDP EIR, development under the 2005 LRDP could involve minor development, such as extension of utility lines or pedestrian or bicycle paths, within Naturalistic open space areas, which can include arroyos that may contain jurisdictional seasonal wetlands or “waters of the U.S.”. The analysis of Impact 4.4-3 in the 2005 LRDP EIR concluded that, with implementation of PS Open Space 3, PS Conservation 1 and 2, PP 4.4-1(a), PP 4.4-1(b), PP 4.4-2(a), PP 4.4.2(b), MM 4.4-3(a), MM 4.4-3(b), and MM 4.4-3(c), there would be less than significant impacts to jurisdictional wetlands.

The majority of the project site has been previously disturbed by the development of the existing Lathhouse B, four plant growth glasses houses, the Arabidopsis plant growth house, metal shed, compost toilet, and paved areas. The closest drainage feature is an unnamed drainage, whose flow line is located approximately 54 feet east of the project site. The unnamed drainage flow line dominated by non-native grassland vegetation, drains approximately 170 feet northeast of the project site into a Detention Basin (see **Figure 9**). The proposed PGEF project, ADA parking, hammerhead driveway, and associated on-site improvements would primarily be within the developed/disturbed areas or ornamental/exotic landscaped areas and not within the unnamed drainage, flow line, Detention Basin, or any other wetlands or areas under the jurisdiction of the CDFW, RWQCB, or U.S. Army Corps of Engineers (USACE). The proposed project would avoid the open space area immediately east of the project site noted as No Impact Zone on **Figure 5**. Nonetheless, in compliance with NPDES, the project proponent would implement BMPs as identified in the UCR Stormwater Management Plan to ensure on-site runoff and any discharges do not flow to the adjacent open space areas east of the project site (PP 4.4-2(b)). Consequently, impacts would be less than significant with incorporation of PP 4.4-2(b), consistent with the

findings in the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impacts on federally protected wetlands (including, but not limited to, marsh, vernal pool, and coastal) as defined by Section 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means with incorporation of the PP noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As identified in Section 4.4, Biological Resources, of the 2005 LRDP EIR, the large undeveloped areas of the southeast hills, including the Botanical Gardens and nearby arroyos, provide opportunities for wildlife connections between the Box Springs Mountains and Sycamore Canyon Park. These undeveloped areas function as potential wildlife corridors as they connect two or more habitat patches that would otherwise be fragmented or isolated from one another. Also, the 2005 LRDP EIR identified that development on campus would result in the removal of mature trees, some of which could be used by migratory birds. Nesting birds and raptors are protected by the MBTA; raptors are also protected by the California Fish and Game Code. The loss of an occupied nest as a result of construction or demolition activities would constitute a substantial adverse effect (such as “take” or “destruction” under Section 3513 of the California Fish and Game Code) and, in the case of raptors, would constitute the “take” or “destruction” of the nest or egg (under Section 3503.5 of the California Fish and Game Code).

The analysis of Impact 4.4-4 in the 2005 LRDP EIR concluded there would be less than significant impacts related to wildlife movement with implementation of PS Open Space 1, 2, 3, and 5; PS Conservation 1 and 2; PP 4.4-1(a); PP 4.4-1(b); MM 4.4-4(a); and MM 4.4-4(b).

The proposed project is located in the central portion of the East Campus and would not involve development within the southeast hills described for wildlife connections. The proposed project would be located within previously developed/disturbed areas and would avoid the open space areas to the east of the project site (see **Figure 5**). Therefore, implementation of the proposed project would not interfere with wildlife movement through identified corridors. Impacts to wildlife movement would be less than significant, which is consistent with the conclusions of the 2005 LRDP EIR.

The proposed project includes PP 4.1-2(a), which ensures that project-specific landscape plans are

consistent with the Campus Design Guidelines with respect to, among other items, retention of existing trees, as further discussed below. In addition, the proposed project incorporates PP 4.1-2(b) and would preserve certain mature trees in place or plant replacement trees within the project site.

As analyzed in the 2005 LRDP EIR, 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. However, implementation of the 2005 LRDP, including the proposed project, could still result in the removal of trees and other vegetation that may serve as perching or nesting sites of migratory birds or raptors. This would constitute substantial interference (take or destruction) with a raptor or migratory species of special concern. Therefore, the proposed project incorporates MM 4.4-4(a), which requires a pre-construction survey for nesting special status avian species and raptors, and MM 4.4-4(b), which requires that exterior construction activities be delayed within the construction footprint or a 250-foot buffer zone until the young have fledged or appropriate MMs responding to the specific situation have been developed and implemented in consultation with USFWS and CDFW. Because the proposed project incorporates all relevant PSs, PPs, and MMs, impacts on nesting birds and raptors would be less than significant with incorporation of PP 4.1-2(a), PP 4.1-2(b), MM 4.4-4(a), and MM 4.4-4(b), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

There would be a less than significant impact to nesting birds and raptors with incorporation of the PPS and MMs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with any applicable policies protecting biological resources?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

UCR is a part of UC, a constitutionally created unit of the State of California. As a State entity, UC is not subject to municipal plans, policies, or regulations such as the County and City General Plans or local ordinances. However, because UCR seeks consistency with local plans and policies, where feasible, it voluntarily reviewed the policies in the *City of Riverside General Plan*. The project site is located within the City of Riverside. Relevant *City of Riverside General Plan* policies include preservation of sage scrub habitat, retention of natural ridgeline areas, and preservation of Rare and Endangered Species habitat. The *County of Riverside General Plan* does not apply to the UCR campus as it includes only unincorporated areas of the County. The analysis of Impact 4.4-5 in the 2005 LRDP EIR concluded there would be less than significant impacts related to consistency with *City of Riverside General Plan* goals related to preservation of biological resources with implementation of PS Conservation 1 and PS Open Space 1 through 3.

As discussed under Thresholds 4a through 4d, the proposed project incorporates PS Conservation

2, PP 4.1-2(a), PP 4.1-2(b), MM 4.4-4(a), and MM 4.4-4(b) and would have less than significant impacts to sensitive biological resources. Additionally, the proposed project would have less than significant impacts related to removal of mature trees and associated potential for disturbance of protected birds and raptors with implementation of the above-listed measures. Accordingly, the proposed project would also be consistent with the *City of Riverside General Plan* policies related to biological resources. Impacts would be less than significant with incorporation of PS Conservation 2, PP 4.1-2(a), PP 4.1-2(b), MM 4.4-4(a), and MM 4.4-4(b), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impacts related to conflict with LRDP policies regarding biological resources with incorporation of the PS, PPS, and MMs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other applicable habitat conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

A Multiple Species Habitat Conservation Plan (MSHCP) was approved and adopted by Riverside County in 2003 as a comprehensive, multijurisdictional Habitat Conservation Plan 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 also serves as a Natural Communities Conservation Plan under the Natural Communities Conservation Planning Act of 1991. UCR is not a Permittee to the Western Riverside MSHCP and therefore is not subject to the Conservation efforts established in the MSHCP. Nonetheless, the following analysis discusses how the proposed project complies with the MSHCP.

Sections of Criteria Cells 634 and 719 of the MSHCP include portions of the UCR campus; however, the project site is not within these Criteria Cells and therefore is not subject to any Conservation efforts. A potential riverine resource (unnamed drainage feature) is located immediately east of the project site, whose flow line is located approximately 54 feet east of the project site. The unnamed drainage feature flow line, dominated by non-native grassland vegetation, drains approximately 170 feet northeast of the project site into a Detention Basin (see **Figure 9**). The proposed project is located outside of the unnamed drainage feature, drainage flow line, and Detention Basin and thus would avoid these features. No suitable habitat for least Bell’s vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), or western yellow-billed cuckoo (*Coccyzus americanus*) was detected within or immediately adjacent to the project site during the time of site assessment by Cadre (Appendix B). Given the avoidance

to the unnamed drainage feature, flow line, and Detention Basin (see **Figure 5**), the project does not conflict with Section 6.1.2 of the MSHCP.

The project site does not occur within a predetermined Survey Area for the MSHCP criteria area species, mammals, amphibians, or narrow endemic plant species. A small 0.01-acre eastern region of the project site occurs within a predetermined survey area for burrowing owl (*Athene cunicularia*), however, no burrowing owl burrows, refugia, or foraging habitat were observed during the time of the site assessment by Cadre (Appendix B). Therefore, no focused surveys were warranted for burrowing owls. As such, the proposed project does not conflict with Sections 6.1.3 and 6.3.2 of the MSHCP. The project site is not located adjacent to an existing or proposed MSHCP Conservation Area. Thus, the project is not subject to the MSHCP Urban/Wildlands Interface guidelines and does not conflict with Section 6.1.4 of the MSHCP.

The 2005 LRDP EIR concluded that development under the 2005 LRDP, of which the proposed project is a part, would not conflict with the MSHCP, and there would be no impact. Therefore, the proposed project would have no impact related to conflict with the MSHCP, consistent with the findings of the LRDP EIR.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

The proposed project would have no impact related to conflict with Western Riverside MSHCP. The proposed project impacts were adequately addressed in the LRDP EIR.

## **5. CULTURAL RESOURCES**

The analysis of cultural resources is tiered from the 2005 LRDP EIR and was addressed in Section 4.5, Cultural Resources, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to cultural resources include earth-moving activities to accommodate the development of the PGEF project, an ADA parking space, a hammerhead driveway, and associated on-site improvements. There are no identified historic resources on the project site.

Information in this section is summarized based on the Historic Building Assessment and Cultural Resource Constraints Analysis prepared for the proposed project and is provided in Appendix C and Appendix D, respectively.

It should be noted that Tribal Cultural Resources are addressed in Section V.17 of this IS/MND.

The following applicable MMs and PPs are incorporated as part of the proposed project and assumed in the analysis presented in this section.

- 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.
- 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.

**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.

**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.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.5-1 in the 2005 LRDP EIR concluded that there would be less than

significant impacts associated with modification of historic or potentially historic resources during construction activities with implementation of PS Conservation 4, MM 4.5-1(a), and MM 4.5-1(b). The analysis of Impact 4.5-2 concluded there would be significant and unavoidable impacts with demolition of historic or potentially historic resources even with implementation of PS Conservation 4, PS Land Use 3, PS Open Space 5, PP 4.5-2, MM 4.5-1(a), MM 4.5-1(b), and MM 4.5-2.

A detailed discussion of the regulatory setting and existing cultural resources is provided in Section 4.5, Cultural Resources, of the 2005 LRDP EIR. As identified, relevant regulatory programs include the Natural Historic Preservation Act of 1966, California Senate Bill 297, and the California Register of Historic Resources (CRHR). The 2005 LRDP EIR identified a total of eight campus structures located on both the East Campus and West Campus that are eligible or potentially eligible for listing in the National Register of Historic Places (NRHP) and/or the CRHR; it also identified structures exceeding 45 years of age that were evaluated and determined not to be eligible for listing as a historic resource. In addition, the 2005 LRDP EIR included a compilation of structures that would be of age for evaluation as potentially historic by the end of the 2005 LRDP planning horizon (in 2015-2016). The planning horizon was extended to 2020-2021 as part of the 2005 LRDP Amendment 2 and, as such, would result in additional campus buildings that are potentially historic.

The project site and temporary construction laydown/staging area are currently developed or have been subjected to previous ground disturbing activities associated with adjacent development (see **Figure 5 and Figure 6**). The existing Lathhouse B, four plant growth glasses houses, the Arabidopsis plant growth house, metal shed, and compost toilet are proposed to be demolished/removed for the construction of the PGEF project (see **Figure 3 and Figure 4**).

Whenever a building over 50 years old is proposed for demolition, UCR is required under CEQA to assess whether or not the loss would have an adverse effect on a potential cultural resource. Additionally, consistent with MM 4.5-1(a) in the 2005 LRDP EIR which states “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 15064.6. 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.”

The metal shed and compost toilet do not meet the 50-year age threshold; however, the Lathhouse B (built in 1965), four plant growth glasses houses (all built in 1956), and the Arabidopsis plant growth (built in 1965) house meet the 50-year age threshold to be considered a potential historical resource under the CRHR (see **Figure 3**). Therefore, since the Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house are over 50 years old, a Historic Building Assessment Report (Appendix C) was prepared for inclusion in this CEQA analysis consistent with PP 4.5-2 in the 2005 LRDP EIR which states “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.” A Department of Parks and Recreation (DPR) form for each of these structures was prepared and evaluated for local, State, and national significance.

On April 26, 2018, a historical resource literature and records search was completed for the proposed project at the Eastern Information Center (EIC) of the California Historical Resource Information System (CHRIS), housed at UCR. The objective of the historical records search was to determine whether or not any of the buildings and structures on the subject site, or within the immediate project vicinity, had been previously documented as a historical resource. Sources consulted during the historic resource literature and records search include the DPR 523 recording forms and historic resource location maps, the NRHP, the CRHR, the Office of Historic Preservation (OHP) Directory of Properties in the Historic Property Data File, and the list of California Historical Landmarks and California Points of Historical Interest. The results of the records search indicate that no previous historic resource surveys have been conducted within close proximity of the project area. One cultural resource, the Citrus Experiment Station, was identified near the project site. This resource was designated a California Historic Point of Interest in 1969. None of the subject buildings within the project area have been previously recorded in the CHRIS.

On April 26, 2018, an intensive-level pedestrian survey and historic building assessment of the Lathhouse B, four plant growth glasses houses, and the Arabidopsis plant growth house was conducted. For information pertaining to the history and development of the Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house, historical USGS maps and aerial photographs; photographs, glass slides, and building plans at the UCR University Archives and Special Collections; and UCR online sources including the Citrus Variety Collection, Botany and Plant Sciences Department History, and Plant Growth Facilities were reviewed. No buildings, structures, or features of interest were visible within the project site prior to 1965.

Additionally, the UCR Department of Architects & Engineers was contacted on April 30, 2018 regarding the construction and developmental history of the structures on the project site. On May 22, 2018, UCR staff provided the *UCR PGE Structure Information* spreadsheet with the structures and original construction dates.

For a property to be eligible for inclusion in the CRHR, one or more of the following criteria must be met:

- Criterion 1: It is associated with the events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Criterion 2: It is associated with the lives of persons important in our past;
- Criterion 3: It embodies 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; and/or,
- Criterion 4: It has yielded, or may be likely to yield, information important in prehistory or history.

The California Register also requires that a resource possess integrity, which is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance." To retain integrity, the evaluation follows the seven aspects of integrity recommended by the National Park Service: location, setting, association, materials, workmanship, design, and feeling (National Park Service 2002).

Under Criterion 1, the Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house are associated with the development and growth of the UCR College of Agriculture and the

Citrus Experiment Station. These institutions came together in the 1950s and 1960s and formed the foundation for the world renowned plant science research programs at UCR. Plant growth facilities including lathhouses and glass houses were crucial infrastructure needed in plant research and experimentation being undertaken at UCR. In 1956, the Citrus Experiment Station was listed as one of the top 10 best undergraduate colleges in the nation (Appendix C). Consequently, the Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house are considered historically significant at the state level under Criterion 1.

The Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house were evaluated to determine whether these structures retain sufficient integrity to convey their state historical significance under Criterion 1. The location of Lathhouse B is original but all four of the plant growth glasses houses and the Arabidopsis plant growth house were moved to their current location sometime after 1965, after the period of significance. Therefore, the plant growth glasses houses and the Arabidopsis plant growth house do not retain integrity related to location and setting. The resources' association with the College of Agriculture and the Citrus Experiment Station is still conveyed. Sections of Lathhouse B are fragmented and are in poor condition and the glass houses no longer feature glass windows which have been replaced with plastic windows. The Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house lack integrity of materials, workmanship, and design. Integrity of feeling is conveyed since these structures are still used for plant growth on campus. In conclusion, the Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house lack integrity of location, setting, workmanship, materials, and design and thus do not retain sufficient integrity to convey their significance under Criterion 1. Consequently, the Lathhouse B, plant growth glasses houses, and the arabidopsis plant growth house do not qualify as historical resources according to CEQA based on the lack of integrity described above.

Under Criterion 2, the Lathhouse B, plant growth glasses houses, and the Arabidopsis plant growth house are not associated with any person(s) of historical significance; therefore, they are not considered historically significant under Criterion 2.

Under Criterion 3, the Lathhouse B, plant growth glasses houses, and the arabidopsis plant growth house convey typical plant growth infrastructure technologies during the twentieth century. There is no evidence these structures represent a new method of construction, an innovative design, or use of a novel technology. Therefore, these structures are not considered historically significant under Criterion 3.

Criterion 4 is most relevant for archaeological sites, but it can apply to built-environment resources where further study has the potential to yield information that cannot be obtained from other sources. However, historical information about plant growth infrastructure is prevalent, and further study would clearly not add any new information. Thus, the Lathhouse B, plant growth glasses houses, and the arabidopsis plant growth house are not considered historically significant under Criterion 4.

Based on the Historic Building Assessment prepared (Appendix C) for the proposed project and summarized above, the proposed project would result in less than significant impacts related to historical resources with incorporation of PP 4.5-2 and MM 4.5-1(a), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impacts related to the potential to cause a substantial adverse change to a significant historical resource as defined in Section 15064.5 of the CEQA Guidelines with incorporation of the PP and MM noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.5-3 in the 2005 LRDP EIR concluded there would be less than significant impacts related to archaeological resources during construction activities with implementation of PS Land Use 2 and 3, PS Open Space 1 through 3 and 5, PS Conservation 1 through 3, and PP 4.5-3.

As discussed in the 2005 LRDP EIR, three archaeological sites have been recorded within the UCR campus: Site CA-RIV-495, a prehistoric site located on a slope in the southeast hills; the 2002 discovery of a previously undocumented prehistoric site located in the southeast hills in the vicinity of Site CA-RIV-495; and Site CA-RIV-4768H, which represents the historic Gage Canal that traverses the West Campus. Also, the cultural resources investigation in support of the 2005 LRDP EIR concluded that the following areas of the UCR campus exhibit moderate sensitivity for unknown archaeological resources: (1) the rolling hills in the southeastern portion of the campus and (2) the agricultural fields on the West Campus.

Regarding the East Campus, the majority of the area 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.

The proposed project is an infill development on a currently developed site within the East Campus. Also, the project area is not located within the southeast hills (not within the Natural Open Space Reserve) or within the West Campus agricultural fields, where on-campus archaeological resources are most likely to be encountered.

A historical resource literature and records search was completed on April 26, 2018 at the EIC at UCR. The historic resource and records search conducted for the proposed project indicated that no archaeological studies have previously occurred within the project area. Therefore, the presence or absence of archaeological deposits in this area is unknown. A field inspection of the project area was conducted on April 26, 2018. The survey efforts consisted of pedestrian transects across the

project area. The field inspection revealed that very little undisturbed land is present within the project area. The ground surface is obscured throughout most of the area by hardscape that includes paved areas for access and parking, and the existing Lathhouse B, plant growth glasses houses, Arabidopsis plant growth house, metal shed, and compost toilet. The small portions of the project that lacked hardscape are characterized by landscaping around the perimeter of the project.

The areas immediately north, west, and south of the project site are developed and contains roadways and UCR academic facilities. Given the developed nature of the site and surrounding areas to the north, south, and west, it was determined that the potential to find intact buried deposits within the project area is low (Appendix D). The area east of the project, east of the proposed hammerhead driveway, contains no buildings or structures and appears to be intact. The project footprint would not expand to the east of the proposed hammerhead driveway where it is currently open space. The proposed project would avoid the open space area immediately east of the project site noted as No Impact Zone on **Figure 5**. Thus, no additional cultural resource survey is required. UCR's standard contractor specifications address protection and recovery of buried artifacts, including archaeological resources, and the standard requirements are incorporated into the project as MM Cul-1, presented below. This mitigation measure identifies steps to be taken in the event archaeological resources, including Native American cultural resources, are discovered during construction.

#### ***Additional Project-Level Mitigation Measures***

**MM Cul-1** If an archaeological resource is discovered during construction, all soil-disturbing work within 100 feet of the find shall cease and the University Representative shall contact a qualified Archaeologist meeting the Secretary of the Interior standards within 24 hours of discovery to inspect the site. If a resource within the project area of potential effect is determined to qualify as a unique archaeological resource (as defined by the California Environmental Quality Act [CEQA]), the University shall devote adequate time and funding to determine if it is feasible, through project design measures, to preserve the find intact. If it cannot be preserved, the University shall retain a qualified non-University Paleontologist/Archaeologist to design and implement a treatment plan, prepare a report, and salvage the material, as appropriate. Any important artifacts recovered during monitoring shall be cleaned, catalogued, and analyzed, with the results presented in a report of findings that meets professional standards.

- a. If significant Native American cultural resources are discovered, as determined by the consulting Archaeologist for which a Treatment Plan must be prepared, the contractor or his Archaeologist shall immediately contact the University Representative. The University Representative shall contact the appropriate tribal representatives.
- b. If requested by tribal representatives, the University, the contractor, or his project Archaeologist shall, in good faith, consult on the discovery and its disposition (e.g., avoidance, preservation, return of artifacts to tribe).
- c. 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. The

University shall immediately notify the Riverside County Coroner of the find and comply with the provisions of *California Health and Safety Code* Section 7050.5.

**Level of Significance**

The proposed project would have a less than significant impact related to a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5 of the CEQA Guidelines with the incorporation of project-level mitigation measure MM Cul-1. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impact 4.5-4 in the 2005 LRDP EIR concluded that there would be less than significant impacts related to paleontological resources during construction activities with implementation of PS Land Use 3; PS Open Space 1, 2, and 5; and PP 4.5-4. As discussed in the 2005 LRDP EIR, the rock and sediment types that underlie the campus are unlikely to be fossil-bearing. However, while the likelihood of encountering paleontological resources is low, the potential for discovery of previously unknown paleontological resources cannot be eliminated. Therefore, there is a potential to encounter unknown paleontological resources because the proposed project involves excavation activities. The proposed project incorporates PP 4.5-4, which outlines the necessary steps to take in the event paleontological resources are uncovered during construction activities. Accordingly, the proposed project would result in a less than significant impact to paleontological resources with incorporation of PP 4.5-4, consistent with the findings of the LRDP EIR.

**Additional Project-Level Mitigation Measures**

None required.

**Level of Significance**

The proposed project would have a less than significant impact related to the potential to directly or indirectly destroy a unique paleontological resource or site or unique geologic feature with incorporation of the PP noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## ***Discussion***

The analysis of Impact 4.5-5 in the 2005 LRDP EIR concluded that there would be less than significant impacts related to the disturbance of human remains, including those interred outside of formal cemeteries, during construction activities with implementation of PS Land Use 3; PS Open Space 1, 2, and 5; PS Conservation 1 and 2; and PP 4.5-5. As discussed in the 2005 LRDP EIR, 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 such, given the presence of archaeological resources on the campus, ground-disturbing activities associated with development could affect unknown human remains, particularly in those areas of the campus that are in a relatively undisturbed condition.

The proposed project minimizes the area on campus subject to disturbance by implementing infill development on a previously disturbed site. Also, human burials, in addition to being potential archaeological resources, have specific provisions for treatment in Section 5097 of the PRC. In accordance with these requirements, the proposed project incorporates PP 4.5-5, which requires implementation of these provisions if human remains are discovered on campus. Accordingly, the proposed project would result in a less than significant impact related to the disturbance of human remains with incorporation of PP 4.5-5, consistent with the findings of the LRDP EIR.

## ***Additional Project-Level Mitigation Measures***

None required.

## ***Level of Significance***

The proposed project would have no impact related to potential disturbance to human remains, including those interred outside of formal cemeteries with incorporation of the PP noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

## **6. GEOLOGY AND SOILS**

The analysis of geology and soils is tiered from the 2005 LRDP EIR and was addressed in Section 4.6, Geology and Soils, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to geology and soils include earth-moving activities to accommodate the required removal and preparation of the underlying soils for the building foundation, ADA parking space, hammerhead driveway, and associated building construction.

Information in this section is primarily based on the Geotechnical Data Report prepared for the proposed project (Appendix E). The geotechnical investigation included excavation of 3 geotechnical borings (B-5 through B-7) on the project site to depths up to 51.5 feet below ground surface (bgs); laboratory testing; and engineering analyses. Materials encountered at the time of the geotechnical evaluation generally consisted of asphalt concrete, alluvium, and Val Verde Tonalite. The asphalt concrete was approximately 2 inches thick in boring B-5 and approximately 1.5 inches thick in borings B-6 and B-7. The alluvium generally consisted of moist, medium dense to very dense, clayey sand and silty sand. An approximate 1-foot-thick layer of firm, sandy clay was encountered in boring B-5 from approximately 2 to 3 feet bgs. Val Verde Formation was encountered below the alluvium in boring B-6 to the total depth explored of approximately 51.5 feet bgs. The Val Verde Formation generally consisted of damp, weathered, tonalite plutonic rock.

The following applicable PPs are incorporated as part of the proposed project and are assumed in the analysis presented in this section.

**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 cause 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 structure 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, at a minimum, comply with seismic provisions of the California Code of Regulations, Title 24, California Administrative Code, the California State Building Code, or local seismic requirements, whichever requirements are most stringent.

**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 specific 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 hours 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].)*

**PP 4.6-2(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 projects.
- (ii) Public involvement/participation.
- (iii) Illicit discharge detection and elimination.
- (iv) Pollution prevention/good housekeeping for facilities.

- (v) 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].)*

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.6-1 in the 2005 LRDP EIR determined that, with implementation of PS Open Space 1 and 2, PS Conservation 2, and PPs 4.6-1(a) through 4.6-1(c), there would be less than significant impacts related to fault rupture, strong seismic shaking, or seismic-related hazards.

The project site is not located within a State of California Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone). The closest Earthquake Fault Zone is the San Jacinto Fault Zone, located approximately 5.8 miles from the project site (Appendix E). The San Jacinto Fault Zone has a maximum moment magnitude of 7.9. Based on geologic reconnaissance and given that the project site is not located on an active fault, it was determined that the probability of damage from surface fault rupture is considered to be low.

Although the project site is not located within an active fault, the project site is located in a seismically active area, as is the majority of southern California. Therefore, as concluded for the UCR campus in the 2005 LRDP EIR, the project area is within a seismically active area and moderate to strong seismic shaking caused an earthquake on any of the active or potentially active nearby local and regional faults (refer to Figure 4.6-2, Regional Fault Map, of the 2005 LRDP EIR) can be expected during the lifetime of the proposed project. Proper engineering design and construction in conformance with the CBC standards and project-specific geotechnical recommendations would ensure that seismic ground shaking would be reduced to less than significant levels. Additionally, the proposed project incorporates PP 4.6-1(b) to comply with UCR’s ongoing program to seismically strengthen existing buildings. The proposed project also incorporates PP 4.6-1(c) which would ensure that buildings and other facilities are designed and

constructed in compliance with the University Policy on Seismic Safety, which requires compliance with the seismic provisions of the current CBC and other State codes as described in PP 4.6-1(c) or local seismic requirements, whichever is more stringent. Therefore, implementation of the proposed project would not expose people and/or structures to potentially substantial adverse effects resulting from strong seismic ground shaking. Impacts are considered to be less than significant.

Other seismic-related hazards investigated in the geotechnical investigation include liquefaction. The site is located in an area mapped as having a low susceptibility for seismically induced liquefaction. Groundwater was not encountered at the time of the geotechnical evaluation and regional maps indicate that groundwater level in the project area is approximately 95 feet bgs. As such, it was determined that liquefaction and liquefaction-related seismic hazards are not considered a design consideration for the proposed project (Appendix E).

The proposed project would be located within the developed/disturbed area of the project site or within the ornamental/exotic landscaped areas. The steep slopes east of the project site would be avoided as shown as No Impact Zone on **Figure 5**. Therefore, impacts related to landslides are considered to be less than significant with incorporation with PP 4.6-1(b) and PP 4.6-1(c), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impacts related to surface fault rupture or seismic-related ground failure, including liquefaction, settlement, or landslides and strong ground shaking with compliance with the above mentioned PPs and compliance with the CBC. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.6-2 in the 2005 LRDP EIR concluded that there would be less than significant impacts related to soil erosion and loss of topsoil with implementation of PS Land Use 2 and 3, PS Open Space 1 through 5, PS Conservation 1 through 3, PP 4.6-2(a), and PP 4.6-2(b).

Soil erosion from water or wind can occur to exposed soils during site clearance, excavation/grading activities, and other earth-disturbing activities associated with construction, including vegetation and hardscape removal. Erosion hazards in most of the East Campus, including the project area, range from slight to moderate. Construction activities associated with the proposed project would comply with all provisions of the most current CBC related to excavation activities, grading activities, erosion control, and construction of foundations and retaining walls to minimize or eliminate soil erosion or loss of topsoil.

The proposed project would also minimize or eliminate soil erosion during construction activities through implementation of dust-control measures consistent with SCAQMD Rule 403 (PP 4.6-2(a)) and implement BMPs, in compliance with the NPDES permit (PP 4.6-2(b)) (refer to the discussion provided for Thresholds V.9a and V.9f in Section V.9, Hydrology and Water Quality, of this IS/MND). When these dust-control measures and construction BMPs are applied, they significantly reduce the erosion potential of project construction to negligible amounts. Therefore, the proposed project would result in less than significant impacts related to soil erosion or loss of topsoil with incorporation of PP 4.6-2(a) and PP 4.6-2(b), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to soil erosion and the loss of topsoil with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.6-3 and 4.6-4 in the 2005 LRDP EIR determined that, with implementation of PS Open Space 1 and 2, PS Conservation 2, and PP 4.6-1(a), there would be less than significant impacts related to unstable geologic materials, including expansive soils.

Groundwater was not encountered at the time of the geotechnical evaluation and regional maps indicate that groundwater level in the project area is approximately 95 feet bgs. The site is located in an area mapped as having a low susceptibility for seismically induced liquefaction. As such, it was determined that liquefaction and liquefaction-related seismic hazards are not considered a design consideration for the proposed project (Appendix E).

The proposed project would be located within the developed/disturbed area of the project site or within the ornamental/exotic landscaped areas. The steep slopes east of the project site would be avoided as shown as No Impact Zone on **Figure 5**. Therefore, impacts related to landslides are considered to be less than significant.

Expansive soils are soils with a significant amount of clay particles that have the ability to give up water (shrink) or take on water (swell). According to Figure 5.6-5 of the City of Riverside’s General Plan 2025 EIR, the project site is not located within a high shrink-swell potential and

therefore, the potential for expansive soil is considered to be low.

Grading plans would be prepared in conformance with applicable recommendations in the geotechnical report which would reduce potential impacts related to landslide, lateral spreading, subsidence, liquefaction, collapse, and expansive soils.

Therefore, with the proposed project’s incorporation of PP 4.6-1(a) and compliance with the geotechnical recommendations outlined in the geotechnical report, there would be less than significant impacts related to unstable and expansive soils, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impacts associated with unstable and expansive soils with incorporation of the PP noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

Through the IS process for the 2005 LRDP EIR, implementation of the 2005 LRDP was determined to have no impact related to soils constraints for alternative wastewater disposal systems and was not carried forward for further discussion in the Draft EIR. There would be no impact related to the use of septic tanks or alternative waste water disposal systems resulting from implementation of the proposed project because existing wastewater infrastructure along East Campus Drive would be used. This is consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water. The proposed project impacts were adequately addressed in the LRDP EIR.

**7. GREENHOUSE GAS EMISSIONS**

The analysis of GHG emissions is tiered from the 2005 LRDP Amendment 2 EIR and was addressed in Section 4.16, Greenhouse Gas Emissions, of that document. As described previously

in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to GHG emissions include (1) demolition of the of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet; removal of asphalt and concrete pavement throughout the project site; and removal of landscape along the northern, southern, and western portion of the project site; (2) construction and operation of a 2-story, approximately 38,000 gsf plant growth environments facility, one ADA accessible parking space, hammerhead driveway, landscape, and associated on-site improvements; (3) proposed on-site stationary equipment include packaged air handlers within the first-floor mechanical room, evaporative cooling and fan coil units for the greenhouse, and an approximately 550 kilowatt/450 kVA diesel standby generator with an approximately 160-gallon belly tank on the east side of the structure; and (4) construction equipment and workers' vehicles during the construction phase of the project. The proposed PGEF project would be designed to achieve, at a minimum, LEED Silver rating.

Under existing conditions, the Lathhouse B facility and plant growth houses are accessible during typical campus business hours, Monday through Friday from about 8:00 AM to 5:00 PM. Restricted access is available outside of these hours based on research activity needs. The same hours of operation would occur with implementation of the proposed project.

Currently, there is a maximum of 10 personnel working actively at the Lathhouse B facility. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel.

Section 4.16 of the 2005 LRDP Amendment 2 EIR (2011) discusses the background of GHG emissions and climate change; the types of GHGs; the State, United States, and global GHG contributions; and the regulatory framework related to GHG emissions and their assessment under CEQA. This information remains applicable to the analysis of GHG emissions related to the proposed project in this IS/MND. In addition, subsequent regulations have been adopted to reduce GHG emissions statewide. Senate Bill 32 (SB 32) was enacted in 2016 and codified a 2030 GHG emissions reduction goal in Executive Order B-30-15 to reduce emissions 40 percent below 1990 levels. In December 2017, CARB approved California's 2017 Climate Change Scoping Plan, which identifies how the State can reach the 2030 climate target and substantially advance toward the 2050 climate goal to reduce GHG emissions by 80 percent below 1990 levels identified in Executive Order S-3-05. Senate Bill 350 was also enacted in 2015 increasing the Renewables Portfolio Standard (RPS) to 50 percent by 2030 and will double the energy savings required in electricity and natural gas end uses.

The following applicable PSs and MM were adopted as part of the 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

**PS Campus and Community 4** Provide strong connections within the campus and its edges to promote walking, bicycling and transit use, rather than vehicular traffic.

**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.

**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.

**MM 4.16-1**

All projects developed under the amended 2005 LRDP shall be evaluated for consistency with the GHG reduction policies of the UCR CAP and the UC Policy on Sustainable Practices, as may be updated from time to time by the University. GHG reduction measures, including, but not limited to, those found within the UCR CAP and UC Policy identified in Tables 4.16-9 and 4.16-10 shall be incorporated in all campus projects so that at a minimum an 8 percent reduction in emissions from BAU is achieved. It is expected that the GHG reduction measures in the UCR CAP will be refined from time to time, especially in light of the evolving regulations and as more information becomes available regarding the effectiveness of specific GHG reduction measures. As part of the implementation of the UCR CAP, the Campus will also monitor its progress in reducing GHG emissions to ensure it will attain the established targets.

In addition, the following MMs are incorporated into the proposed project and would reduce GHG emissions: MM 4.3-2(b) included under the Air Quality analysis (Section V.3 of this IS/MND) which requires UCR to continue to participate in GHG reduction programs; MM 4.14-1(b) included under the Transportation and Traffic analysis (Section V.16 of this IS/MND), which requires UCR to enhance its Transportation Demand Management (TDM); and MM 4.14-1(d) included under the Transportation and Traffic analysis (Section V.16 of this IS/MND), which requires UCR to review individual projects for consistency with UC sustainable transportation policy and UCR TDM strategies.

**Project Impact Analysis**

<b>Threshold(s)</b>	<b>Potential Significant Impact</b>	<b>Project Impact Adequately Addressed in LRDP EIR</b>	<b>Less Than Significant With Project-Level Mitigation Incorporated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.16-1 in the 2005 LRDP Amendment 2 EIR concluded that, although development under the 2005 LRDP Amendment 2 would generate substantial direct and indirect GHG emissions, impacts would be less than significant with implementation of MM 4.16-1. UCR has committed to reduce GHG emissions by over 70 percent by 2020 from BAU projections.

## Existing Campus Emissions

Total UCR campus operational GHG emissions for 2008 were estimated at 166,966 metric tons of CO<sub>2</sub> equivalent (MTCO<sub>2</sub>e) per year, as provided in UCR’s CAP (UCR 2010). Campus GHG emissions in 2008 were approximately double the 1990 emissions (82,167 MTCO<sub>2</sub>e), commensurate with the steady growth experienced in both campus population and building space. During the 1990 to 2000 period, the total campus population increased approximately 46 percent and building space increased approximately 40 percent. From 2000 to 2008, the population increased approximately 35 percent and space increased approximately 43 percent. However, despite an increase in the rate of growth in building space between 2000 and 2008, the rate of growth in GHG emissions decreased in this time period due to the implementation of a number of energy-efficient projects on the campus (UCR 2010).

## Project Construction Emissions

Project-specific analysis was conducted for the proposed project to determine the project’s contribution to greenhouse gas emissions (Appendix A). The CalEEMod model calculates GHG emissions from fuel usage by construction equipment and construction-related activities, like construction worker trips, for the proposed project. The CalEEMod estimate does not analyze emissions from construction-related electricity or natural gas. Construction-related electricity and natural gas emissions vary based on the amount of electric power used during construction and other unknown factors which make them too speculative to quantify. **Table 7-1 – Project Construction Equipment GHG Emissions** provide the GHG emissions during short-term construction activities of the proposed project.

**Table 7-1 – Project Construction Equipment GHG Emissions**

Year	Metric Tons per year (MT/yr)			
	Total CO <sub>2</sub>	Total CH <sub>4</sub>	Total N <sub>2</sub> O	Total CO <sub>2</sub> E
2019	161.87	0.04	0.00	162.86
2020	100.32	0.03	0.00	100.97
<b>Total</b>	<b>262.19</b>	<b>0.07</b>	<b>0.00</b>	<b>263.83</b>
			<b>Amortized</b>	<b>8.79</b>

Source: CalEEMod (Appendix A).

Notes: GHG – Greenhouse Gas; CO<sub>2</sub> – Carbon Dioxide; MT/yr – Metric Tons per year; CH<sub>4</sub>- Methane; N<sub>2</sub>O – Nitrous Oxide; CO<sub>2</sub>E – Carbon Dioxide or Equivalent.

As shown on **Table 7-1**, an estimated 264 MTCO<sub>2</sub>E would occur from project construction equipment over the course of the estimated construction period. Since the draft SCAQMD GHG threshold Guidance document released in October 2008<sup>7</sup> recommends that construction emissions be amortized for a project lifetime of 30 years to ensure that GHG reduction measures address construction GHG emissions as part of the operational reduction strategies. Therefore, the total GHG emissions from Project construction were amortized and are included in **Table 7-3**, below.

## Project Operational Emissions

### *Area Source Emissions*

CalEEMod estimates the GHG emissions associated with area sources which include landscape equipment emissions, architectural coating, consumer products, and hearths. Landscape equipment

<sup>7</sup> [http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-\(ghg\)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2](http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2)

servicing the project site create CO<sub>2</sub> resulting from fuel combustion based on the project’s land uses. Consumer products consist of consumer use of solvents and personal care products and architectural coatings consist of an average building square footage to be repainted each year. Hearth emissions do not apply to the proposed project because no dwelling units are proposed. The CalEEMod output included as Appendix A shows that the GHG emissions from area sources are negligible and are reported at zero.

*Energy-Related Emissions*

CalEEMod estimates the GHG emissions associated with building electricity and natural gas usage (non-hearth) for each land use type. Electricity and natural gas used in buildings is typically generated at an off-site power plant which indirectly generates GHG emissions. The default energy usage values used in CalEEMod are based on the CEC sponsored California Commercial End Use Survey and Residential Appliance Saturation Survey studies and reflect 2016 Title 24 improvements (CalEEMod User’s Guide, Appendix A). The default energy usage values were used in this analysis. **Table 7-2 Energy-Related GHG Emissions** summarizes the GHG emissions estimates reported by CalEEMod for the proposed project.

**Table 7-2 – Energy-Related GHG Emissions**

Source	Metric Tons per year (MT/yr)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Electricity	217.53	0.01	0.00	217.94
Natural Gas	7.04	0.00	0.00	7.08
<b>Total</b>	<b>224.57</b>	<b>0.01</b>	<b>0.00</b>	<b>225.02</b>

Source: CalEEMod (Appendix A).

Notes: Emissions reported as zero are rounded and not necessarily equal to zero.

GHG – Greenhouse Gas; CO<sub>2</sub> – Carbon Dioxide; MT/yr – Metric Tons per year; CH<sub>4</sub>- Methane; N<sub>2</sub>O – Nitrous Oxide; CO<sub>2</sub>E – Carbon Dioxide or Equivalent.

*Mobile Source Emissions*

CalEEMod estimates the annual GHG emissions from project-related vehicle usage based on trip generation data contained in defaults or in a project-specific traffic analyses. As stated above, the trip generation data is based on the new personnel projections of 20. **Table 7-3** shows the mobile source emissions from the proposed project.

*Solid Waste Emissions*

CalEEMod also calculates the GHG emissions associated with the disposal of solid waste into landfills based on default data contained within the model for waste disposal rates, composition, and the characteristics of landfills throughout the state. A large percentage of this waste would be diverted from landfills by a variety of means, such as reducing the amount of waste generated, recycling, and/or composting. The remainder of the waste not diverted would be disposed of at a landfill. This analysis assumes a solid waste diversion from the landfills consistent with data provided by the state. The waste diversion rate was evaluated in the model by selecting the mitigation option for solid waste and **Table 7-3** shows the solid waste emissions from the project utilizing this waste reduction rate.

*Water-Related Energy Use*

Electricity is also indirectly used in water supply, treatment, and distribution, as well as wastewater treatment in Southern California and plays a large role in GHG production.

There are three processes necessary to supply potable water to urban users (i.e., residential,

commercial, and industrial): (1) supply and conveyance of the water from the source; (2) treatment of the water to potable standards; and (3) distribution of the water to individual users. After use, the wastewater is treated and either reused as reclaimed/recycled water or returned to the environment. CalEEMod calculates the GHG emissions from these processes based on default emissions factors and water/wastewater generation rates for a project’s location. Default values were used for electricity intensity factor associated with the supply and conveyance of water from its source which assumes that the water is being imported from Northern California. Because CalEEMod does not contain a land use type for the plant growth environments facility, average annual water usage was provided by the applicant and input into CalEEMod. The facility is estimated to use 7,064,423 gallons of water per year. **Table 7-3** shows the resulting GHG emissions from water-related energy usage for the proposed project.

*Total GHG Project Emissions*

As shown on **Table 7-3 – Total Project-Related GHG Emissions**, using all the emissions quantified above, the total GHG emissions generated from the proposed project is approximately 375.62 MTCO<sub>2</sub>E/yr which includes construction-related emissions amortized over a typical project life of 30 years.

**Table 7-3 – Total Project-Related GHG Emissions**

Source	Metric Tons per year (MT/yr)			
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total CO <sub>2</sub> E
Amortized Construction	--	--	--	8.79
Energy	224.57	0.01	0.00	225.02
Mobile	70.29	0.00	0.00	70.38
Solid Waste	2.58	0.15	0.00	6.40
Water	57.55	0.23	0.01	65.03
<b>Total</b>	<b>354.99</b>	<b>0.39</b>	<b>0.01</b>	<b>375.62</b>

Source: CalEEMod (Appendix A).

Notes: Emissions reported as zero are rounded and not necessarily equal to zero.

GHG – Greenhouse Gas; CO<sub>2</sub> – Carbon Dioxide; MT/yr – Metric Tons per year; CH<sub>4</sub>- Methane; N<sub>2</sub>O – Nitrous Oxide; CO<sub>2</sub>E – Carbon Dioxide or Equivalent.

The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impact 4.16-2 in the 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP, as amended, would result in a less than significant impact related to conflict with applicable plans, policies, or regulations concerning reductions in GHG emissions. The applicable plans, policies, or regulations pertinent to the proposed project include (1) the UC Policy on Sustainable Practices (last issued in January 2018) and (2) the UCR CAP (UC 2018 and UCR 2010). These plans established GHG reduction goals consistent with Assembly Bill 32 (AB 32). Additionally, the project does not propose facilities or operations that would substantively interfere with or impede any future mandated regulations enacted or promulgated to legally require

development to assist in meeting state-adopted GHG emissions reduction targets, including those established under Executive Order S-3-05, Executive Order B-30-15, SB 32, or the 2017 Scoping Plan.

The Green Building Design section of the UC Policy on Sustainable Practices includes the following goals for new buildings that are applicable to the proposed project:

- All new building projects, other than acute care facilities, shall be designed, constructed, and commissioned to outperform the CBC energy-efficiency standards by at least 20 percent. The University will strive to design, construct, and commission buildings that outperform CBC energy efficiency standards by 30 percent or more, whenever possible within the constraints of program needs and standard budget parameters.<sup>8</sup>
- All new buildings will achieve a USGBC LEED “Silver” certification at a minimum.
- All new buildings will strive to achieve certification at a USGBC LEED “Gold” rating or higher, whenever possible within the constraints of program needs and standard budget parameters.
- All new building projects will achieve at least two points within the available credits in LEED-BD+C’s Water Efficiency category.
- Major Renovations shall outperform CBC energy-efficiency standards by 20 percent.

UCR’s CAP, prepared in 2010, describes and addresses policy and regulatory requirements of the UC Policy on Sustainable Practices; Assembly Bill 32; American College and University Presidents Climate Commitment, to which UCR is a signatory; CEQA; and USEPA reporting requirements. Consistent with the UC Policy on Sustainable Practices, the UCR CAP establishes the goal and emission reductions methods for the campus to reduce GHG emissions to 1990 levels by 2020.

The proposed project incorporates MM 4.3-2(b), which requires UCR to implement the GHG reduction measures described in the 2005 LRDP Amendment 2 EIR (Tables 4.16-9 and 4.16-10 in Section 4.16); MM 4.14-1(b), which requires UCR’s continued implementation and enhancement of its TDM program; MM 4.14-1(d), which requires UCR’s review of individual projects for consistency with UC transportation policy and TDM strategies; and MM 4.16-1, which requires UCR’s review of individual projects for consistency with the GHG reduction policies of the UC Policy on Sustainable Practices and the CAP. Additionally, implementation of the proposed project would 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 UC (PS Conservation 5).

The proposed project would incorporate an ADA pedestrian pathway and crosswalks that would connect the site to East Campus Drive and Eucalyptus Drive thereby providing a continuous network of bicycle lanes and paths (PS Transportation 3) and strong connections within the campus and its edges to promote walking, bicycling, and transit use, rather than vehicular traffic (PS Campus and Community 4). Bicycle racks would also be provided at the PGEF building for those who ride their bicycles to the project site (PS Transportation 5). Specifically, the design, construction, and operation of the proposed project would include a series of green building

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<sup>8</sup> The UC Policy also offers an alternative “energy performance target” method.

strategies under development, along with mandatory strategies required by the CalGreen Code and the UC Policy on Sustainable Practices to exceed CBC energy efficiency requirements by 20 percent or greater (for new buildings). Additionally, the proposed project would comply with applicable UC Policy on Sustainable Practices for climate protection and carbon neutrality, recycling and waste management, and sustainable food services (e.g., food procurement, education, engagement with external stakeholders, and sustainable operations).

Based on the above analysis, the proposed project would not conflict with the UCR CAP or the UC Policy on Sustainable Practices. Impacts would be less than significant with incorporation of PS Campus and Community 4, PS Conservation 5, PS Transportation 3, PS Transportation 5, MM 4.3-2(b), MM 4.14-1(b), MM 4.14-1(d), and MM 4.16-1, consistent with the findings of the LRDP EIR.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

The proposed project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. Impacts were considered less than significant with incorporation of the PSs and MMs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

## **8. HAZARDS AND HAZARDOUS MATERIALS**

The analysis of hazards and hazardous materials is tiered from the 2005 LRDP EIR and was addressed in Section 4.7, Hazards and Hazardous Materials, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to hazards and hazardous materials include the demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed for the construction of the PGEF project and associated site improvements. The existing buildings to be demolished have the potential to contain asbestos-containing materials (ACMs) and lead-based paint (LBP) due to their age. Landscape maintenance chemicals and cleaning products would continue to be used, consistent with existing campus operations. The design of the proposed project ensures that emergency access to and around the project area is maintained.

Section 4.7 of the 2005 LRDP EIR provides a detailed description of the hazardous materials and wastes handled and/or generated at UCR and the policies, programs, and practices implemented to manage these materials in compliance with local, State, and Federal regulations, as applicable. These include, but are not limited to, the following programs offered by UCR's Environmental Health and Safety (EH&S) Department: Biosafety; Emergency Management; Campus Emergency Response Plan; Environmental Health; Environmental Programs; Hazardous Materials Program; Spill Prevention, Control and Countermeasures Plan; Industrial Hygiene and Safety; Laboratory/Research Safety; and Radiation Safety.

The following applicable PPs were adopted as part of the 2005 LRDP EIR as supplemented and updated by the 2005 LRDP Amendment 2 EIR; they are incorporated as part of the proposed project and assumed in the analysis presented in this section.

- PP 4.3-2(c)** The Campus shall continue to implement SCAQMD Rule 1403-Asbestos when demolishing existing buildings on campus.
- 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 and construction. When remediation is deemed necessary, surveys shall identify all potential hazardous materials within the structure to be demolished, and identify 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.
- 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., flag persons), 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, Architects & Engineers (formerly 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.)*
- 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.

## Project Impact Analysis

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### *Discussion*

The analysis of Impacts 4.7-1 through 4.7-4 in the 2005 LRDP EIR concluded that, with implementation of PP 4.7-1 through PP 4.7-4 and MM 4.7-4, development under the 2005 LRDP would have a less than significant impact during construction (including demolition and utility line relocation activities) and long-term operations related to public exposure to hazards from (1) the routine transport, use, or disposal of hazardous materials and (2) a reasonably foreseeable upset and accident condition involving the release of hazardous materials.

As defined in the 2005 LRDP EIR, for purposes of this analysis, hazardous materials include inorganic and organic chemicals and products (chemical reagents and reactions) containing such substances as defined by California laws and regulations, radioactive materials, and biohazardous materials.

### Construction-Related Hazards

As discussed in Section 4.7 of the 2005 LRDP EIR, maintenance, renovation, or demolition of existing buildings and extension and/or relocation of utility systems as part of 2005 LRDP implementation could expose construction workers and campus occupants to hazardous materials or wastes that may be present in buildings or in underground utilities (Impact 4.7-2).

In accordance with PP 4.7-2, an assessment of the existing buildings on the project site would be conducted to determine if they contain asbestos or lead. The contractor would be required to provide suitable abatement in accordance with State law should the existing buildings to be demolished contain asbestos or lead. As identified in the 2005 LRDP EIR, 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. As required by PP 4.3-2(c) and PP 4.7-2, the Campus shall follow applicable Federal, State and local rules and regulations (including SCAQMD Rule 1403) during building demolition to ensure construction worker and public safety when handling any asbestos containing materials.

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 LBP. In 1978, the federal government began to regulate the use of lead in house paint. Because many structures on the UCR campus were constructed prior to 1978, wall surfaces and other building materials may contain LBPs, 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) can result in the accumulation of lead in the blood, soft tissues, and bones. As required by PP 4.7-2, the Campus shall follow applicable rules and regulations during building demolition to ensure construction worker and public safety when handling lead-based paint.

There have been localized areas of soil contamination on campus in connection with leaking underground storage tanks (USTs) in the past, all of the sites on campus have been remediated and properly closed. Additionally, although there is no known contamination associated with the historic use of agricultural teaching and research fields in the West Campus, 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 facilities in the West Campus north of Martin Luther King Jr. 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. The proposed project is located in the East Campus and would not expose construction workers or building occupants to these potential hazards.

Additionally, construction activities, including extension or relocation of utilities, could encounter abandoned pipes, discarded building materials, unknown USTs, or previously unidentified contaminated soil, which could result in the exposure of construction workers or campus occupants to hazardous materials.

The proposed project incorporates PP 4.7-1, described above, which requires compliance with Federal, State, and local regulations as well as current (or equivalent) campus plans, programs, and practices related to the use, storage, disposal, and transport of hazardous materials and wastes. Therefore, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials during construction; there would be a less than significant impact, consistent with the findings of the LRDP EIR.

### Operational Hazards

#### *Hazardous Materials Use and Transport*

As discussed in Section 4.7 of the 2005 LRDP EIR, implementation of the 2005 LRDP would include development of facilities that use hazardous materials in teaching and research activities; development of such facilities are not included under the proposed project. However, with an increase in on-campus facilities, expansion of maintenance and cleaning services would be required, which would increase the use, handling, storage, and disposal of products routinely used in building maintenance, some of which may contain hazardous materials (Impact 4.7-1). This, in turn, would result in an increase in the amount of hazardous materials that are used, stored, transported, and disposed of and could increase the potential for an accident or accidental release of hazardous materials or wastes (Impact 4.7-3).

As discussed in the 2005 LRDP EIR, transportation of hazardous materials and wastes along any City or State roadway or rail lines within or near the campus is subject to all relevant Department of Transportation (Caltrans), California Highway Patrol, and California Department of Health Services hazardous materials and wastes transportation regulations, as applicable. Regular inspections of licensed waste transporters are conducted by a number of agencies to ensure compliance with requirements that range from the design of vehicles used to transport wastes to the procedures to be followed in case of spills or leaks during transit.

To minimize risks associated with routine hazardous material use on campus, the proposed project incorporates PP 4.7-1, which requires compliance with Federal, State, and local regulations as well as current (or equivalent) campus plans, programs, and practices related to the use, storage, disposal, and transport of hazardous materials and wastes. Modifications of these existing programs and services are made over time to make sure that they continue to keep the campus in compliance with the numerous hazardous materials laws and regulations at all levels of government.

Other hazardous materials that may be used as part of the proposed project include commercial cleaning products, and plant and landscape maintenance chemicals. Cleaning products would be disposed of either through the wastewater system (i.e., sinks, laundry) or evaporation. Neither chlorine nor standard cleaning products (i.e., degreasers, window cleaning products) are used in quantities that would result in adverse health effects either through direct exposure to the skin or inhalation. Pesticides and herbicides are directly applied to affected areas using methods that follow State and County laws and/or guidelines.

The potential for accidents involving hazardous materials during operation would not increase with the proposed project since the types of uses would be consistent with existing conditions at the project site and other locations on campus. Additionally, operation of the proposed project would comply with applicable Federal, State, and local laws and regulations and with the existing UCR programs, practices, and procedures required by PP 4.7-1, identified above. Therefore, the proposed project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials during operation; there would be a less than significant impact with incorporation of PP 4.3-2(c), PP 4.7-1, and PP 4.7-2, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to the potential to create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impacts 4.7-5 in the 2005 LRDP EIR concluded that, with implementation of PP 4.7-1, development under the 2005 LRDP would have a less than significant impact related to hazardous emissions of handling hazardous materials within a one-quarter mile of a school. There are no K-12 schools located within a ¼-mile of the project site. The nearest school from the project site is the Riverside STEM Academy School (4666 Mount Vernon Avenue), located approximately 0.6 mile southwest of the project site and the UCR Child Development Center (3333 W. Blaine Street) located approximately 0.7 mile northwest of the project site. The proposed project does not involve the operation of any uses that would involve the use, storage, transport, and disposal of hazardous materials beyond that which currently occurs on campus, including hazardous materials associated with greenhouse facilities. Compliance with Federal, State, and local regulations as well as current (or equivalent) campus plans, programs, and practices related to the use, storage, disposal, and transport of hazardous materials and wastes, as required by PP 4.7-1, would ensure that risks associated with hazardous emissions or materials would be eliminated or reduced through proper handling techniques, disposal practices, and/or cleanup procedures.

The proposed project incorporates PP 4.7-1, which would ensure the appropriate use and transport of common hazardous materials, including cleaning and landscape maintenance products, as discussed under Thresholds a and b, above. Therefore, there would be no impact related to handling hazardous materials within a ¼ mile of a school with incorporation of PP 4.7-1, consistent with the findings of the LRDP EIR.

**Additional Project-Level Mitigation Measures**

None required.

**Level of Significance**

The proposed project would have no impact related to handling hazardous materials within one-quarter mile of a school with incorporation of the PP noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impact 4.7-6 in the 2005 LRDP EIR concluded that development under the 2005 LRDP would have a less than significant impact related to construction on a site included on the Cortese List, which is compiled pursuant to Section 65962.5 of the California Government Code.

The project site is not included in any database of sites compiled pursuant to Section 65962.5 of the California Government Code, referred to as the Cortese List and collected by the California Environmental Protection Agency (CalEPA 2018). Specifically, the project site is not identified on (1) the California Department of Toxic Substances Control’s (DTSC’s) Hazardous Waste and Substances Site List, also called Envirostor; (2) the DTSC’s list of hazardous waste facilities where the DTSC has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment; (3) the State Water Resources Control Board’s (SWRCB’s) Leaking Underground Storage Tank (LUST) sites, also called GeoTracker; (4) the SWRCB’s list of Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO); and (5) the SWRCB’s list of solid waste disposal sites with waste constituents above hazardous waste levels outside the waste management unit (CalEPA 2018 and DTSC 2018). As such, the proposed project would not be located on a site included on a list of hazardous materials site that would create a significant hazard to the public or the environment; no impacts would occur, consistent with the findings of the LRDP EIR.

**Additional Project-Level Mitigation Measures**

None required.

**Level of Significance**

The proposed project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to *California Government Code* Section 65962.5 and would have no impact. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

Based on the IS prepared for the 2005 LRDP EIR, development under the 2005 LRDP was determined to have no impact related to public use airports or private airstrips and was not carried forward for further discussion in the Draft EIR. Specifically, the UCR campus including the project site is not located within two miles of a public airport or public use airport; it has not been included in an airport land use plan; and it is not located within the vicinity of a private airstrip. Therefore,

the proposed project would not result in any impacts from safety hazards associated with airports or airstrips, consistent with the findings of the LRDP EIR.

**Additional Project-Level Mitigation Measures**

None required.

**Level of Significance**

The proposed project would have no impacts related to public use airports or private airstrips. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impact 4.7-7 in the 2005 LRDP EIR concluded that, with implementation of PS Land Use 3, PS Open Space 1, PS Open Space 4 through 7, PS Transportation 4, PP 4.7-7(a), PP 4.7-7(b), MM 4.7-7(a), and MM 4.7-7(b), development under the 2005 LRDP would have a less than significant impact related to impairing the implementation of or physically interfering with an adopted emergency response plan or emergency evacuation plan.

EH&S is responsible for the campus’ Emergency Operations Plan (EOP), 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. The EOP was last updated in December 2011. 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 EOP to ensure awareness and proper coordination when emergency situations occur on the campus. In the event of an emergency, the proposed project would incorporate PP 4.8-10 by implementing the campus’ EOP.

Access to the project site would still be provided off East Campus Drive. 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. Construction of the proposed project could result in temporary lane or roadway closures to an on-campus road, such as East Campus Drive. However, construction and operation of the proposed project would be designed to ensure that the EOP is maintained and that emergency access on campus is not impeded, including existing fire lanes near the project area. Notably, as shown on the conceptual site plan provided in **Figure 5**, a hammerhead driveway would be constructed on the project site to allow fire trucks and emergency responders to maneuver on the site.

Also, the proposed project incorporates PP 4.7-7(a), which requires the maintenance of at least one unobstructed lane in both directions on campus roadways, to the extent feasible, and PP 4.7-7(b), which requires consultation between UCR and the UC Police Department (UCPD), Riverside Fire Department, and UCR EH&S to identify alternative travel routes for emergency vehicle access when construction projects result in roadway closures.

Therefore, the proposed project would result in a less than significant impact related to emergency response and evacuation on campus with incorporation of PP 4.7-7(a), PP 4.7-7(b) and PP 4.8-10), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to implementation of or physical interference with an adopted emergency response plan or emergency evacuation plan with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
h) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.7-8 in the 2005 LRDP EIR concluded that, with implementation of PS Open Space 1, MM 4.7-8(a), and MM 4.7-8(b), development under the 2005 LRDP would have a less than significant impact related to wildfires. The 2005 LRDP EIR identified the campus areas that may be subject to wildland fires, which include the following areas located adjacent to the southeast hills and the Botanic Gardens: the area south of South Campus Drive and areas currently occupied by Parking Lots 13 and 10, east of East Campus Drive.

The areas east of the project include open space and could be subject to indirect wildland fire in the event wildland fire starts in the southeast hills and the Botanic Gardens which is located east and southeast of the open space area adjacent to the project site. The proposed project would be constructed on previously disturbed/developed areas and would avoid the open space area to the east as shown as No Impact Zone on **Figure 5**. Existing campus development occurs to the north, south, and west. The proposed project would be designed and constructed in compliance with applicable requirements of the California Fire Code. Specifically, fire sprinklers, fire alarm systems, emergency lighting, emergency response notification systems, and illuminated signage would be installed at the PGEF building. Additionally, a fire water connection is proposed to feed the hydrants, sprinkler systems for the facility, along with Fire Department Connection assemblies. Therefore, compliance with the California Fire Code would ensure impacts related to wildland fires is less than significance, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant impact related to wildland fires. The proposed project impacts were adequately addressed in the LRDP EIR.

## 9. HYDROLOGY AND WATER QUALITY

The analysis of hydrology and water quality is primarily tiered from the 2005 LRDP EIR; however, current regulatory information and selected portions of the impact analysis, as indicated, are tiered from the 2005 Amendment 2 EIR. Hydrology and water quality issues are addressed in Section 4.8 of both documents. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to hydrology and water quality include the use of treatment-based LID BMPs. The analysis of hydrology and water quality is applicable to the proposed project which would involve the same types of uses, and a similar amount of pervious and impervious surface.

The following applicable PSs and PPs were adopted as part of the 2005 LRDP Amendment and/or 2005 LRDP Amendment 2 EIR; they are incorporated as part of the proposed project and have been assumed in the analysis presented in this section.

### 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.)*

### PP 4.8-2(a)

To further reduce the campus' impact on domestic water resources, to the extent feasible, UCR will:

- (i) Install hot water recirculation devices (to reduce water waste).
- (ii) Continue to require all new construction to comply with applicable State laws requiring water-efficient plumbing fixtures, including but not limited to the Health and Safety Code and Title 24, California Code of Regulations, Part 5 (California Plumbing Code).
- (iii) Retrofit existing plumbing fixtures that do not meet current standards on a phased basis over time.
- (iv) Install recovery systems for losses attributable to existing and proposed steam and chilled-water systems.
- (v) Prohibit using water as a means of cleaning impervious surfaces.
- (vi) Install water-efficient irrigation equipment to maximize water savings for landscaping and retrofit existing systems over time.

*(This is identical to Utilities PP 4.15-1[b].)*

**PP 4.8-2(b)**

The Campus shall promptly detect and repair leaks in water and irrigation pipes. *(This is identical to Utilities PP 4.15-1[c].)*

**PP 4.8-3(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.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Would the project otherwise substantially degrade water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.8-1 and 4.8-7 in the 2005 LRDP EIR concluded that, with implementation of PS Conservation 2 and PP 4.8-1, there would be a less than significant impact related to violation of existing water quality standards or waste discharge requirements and

degradation of water quality. A detailed discussion of the regulatory setting for water quality is provided in Section 4.8, Hydrology and Water Quality, of the 2005 LRDP Amendment 2 EIR. The Clean Water Act (CWA) establishes a framework for regulating potential water quality impacts through the NPDES program. Phase I of the NPDES Program requires NPDES permits for storm water discharge from a large number of priority sources, including Municipal Separate Storm Sewer System Permits (MS4s) serving populations of over 100,000; several categories of industrial activity; and construction activity that disturbs one acre or more, as discussed further below.

Phase II of the NPDES Program regulates storm water discharges from Small MS4s (such as schools and universities). As part of Phase II, the State Water Resources Control Board (SWRCB) adopted a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities, including non-traditional Small MS4s, which include public campuses. The Phase II Small MS4 General Permit covers Phase II Permittees statewide. On February 5, 2013, the Phase II Small MS4 General Permit was adopted and became effective on July 1, 2013 (WQ Order No. 2013-0001-DWQ). UCR was approved for coverage under the Phase II MS4 permit program, and is required to comply with the requirements of the MS4 permit including:

1. Education and outreach program;
2. Public involvement and participation program;
3. Illicit discharge detection and elimination;
4. Construction site storm water runoff control program;
5. Pollution prevention/good housekeeping for facilities;
6. Post-construction stormwater management program; and
7. Program effectiveness assessment and improvement.

### Construction

Implementation of the proposed project could result in runoff exiting the project site during project construction. Storm water runoff during construction could contain pollutants such as soils and sediments released during grading and excavation activities as well as petroleum-related pollutants due to spills or leaks from heavy equipment and machinery. Other common pollutants that may result from construction activities include solid or liquid chemical spills; concrete and related cutting or curing residues; wastes from paints, stains, sealants, solvents, detergents, glues, acids, lime, plaster, and cleaning agents; and heavy metals from equipment.

The proposed project would involve construction activities on more than one acre<sup>9</sup>; therefore, the proposed project incorporates PP 4.8-1 and PP 4.8-3(d), which requires compliance with requirements and water quality standards set forth within the current NPDES permit regulations. The SWRCB is authorized by the USEPA to oversee the NPDES program through the RWQCBs. The proposed project would be subject to the requirements of the Statewide General NPDES Permits, including the requirement to obtain coverage under the Statewide General NPDES Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities

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<sup>9</sup> Once Design Build for the proposed project is finalized and it is determined that the actual disturbance is under one acre, then a SWPPP would not be required for the project.

(NPDES No. CAS000002, California Water Resources Control Board Resolution No. 2001-046; Modification of Water Quality Order 99-08-DWQ, SWRCB, NPDES, General Permit for Storm Water Discharges Associated with Construction Activity). This permit was revised on September 2, 2009 (Construction General Permit Order 2009-0009-DWQ) and was subsequently amended by Order No. 2010-0014-DWQ and Order No. 2012-0006-DWQ. Order No. 2012-0006-DWQ became effective on July 17, 2012. Specifically, the proposed project would require completion and filing of a Permit Registration Document with the SWRCB, which consists of a Notice of Intent, Risk Assessment, Site Map, Stormwater Pollution Prevention Plan (SWPPP), annual fee, and a signed certification statement. The primary objective of the SWPPP is to identify, construct, implement, and maintain BMPs to reduce or eliminate pollutants in storm water discharges and authorized non-storm water discharges from the construction site during construction.

An SWPPP typically includes both source-control and treatment-control BMPs to reduce water quality impacts. The BMPs that are most often used during construction include watering exposed soils; covering stockpiles of soil; installing sandbags to minimize off-site runoff; creating temporary desilting basins; and timing grading to avoid the rainy season (November through April). In addition, coverage under the Construction Permit would also include implementation of post construction standards to achieve the pre-project volume and rate of storm water runoff from the project area. The proposed project would meet these standards through installation of active and passive treatment units, as described below under “Operation”. The proposed project also incorporates PP 4.8-3(c), which requires implementation of SCAQMD Rule 403 for management of fugitive dust during construction. Finally, the proposed project would be required to comply with applicable provisions of the 2016 California Building Code and 2016 CalGreen Code, which became effective January 1, 2017, and require the reduction of erosion and sedimentation and therefore further reduce construction-related water quality impacts.

Because the PPs discussed above are included in the proposed project, short-term construction-related water quality impacts would be less than significant, which is consistent with the findings of the UCR 2005 LRDP EIR.

### Operations

As discussed under the analysis of Impact 4.8-1 in the 2005 LRDP EIR, the UCR campus is not considered a point source for regulatory purposes and is not subject to Waste Discharge Requirements (WDRs). In addition, no hazardous wastes generated on campus are discharged into the sewer or storm drainage systems. Therefore, the proposed project which is located within the East Campus of UCR would not violate WDRs.

Implementation of the proposed project would introduce impervious surfaces which would result in increased storm water runoff that would contain contaminants that are typical of urbanized areas. Specifically, pollutant-generating activities associated with operation of the proposed project include drain or wash water from drain lines and other sources; fire sprinkler test water; interior floor drains; stationary equipment; outdoor storage of equipment or materials. Source-control BMPs would be implemented to address the following activities:

- Drain or wash water from the service yard would be directed into the sewer system via an automatic switch/diversion control valve downstream of the trench drain. Storm water would enter the storm drain system, while non-storm water would enter the sanitary sewer system.

- Interior floor drains would be directed to the sanitary sewer system.
- Outdoor storage of equipment or materials would be covered to the maximum extent practical to reduce the potential of storm water contact.

The following site-design BMPs would be implemented to reduce project site runoff from the 85<sup>th</sup> percentile storm event:

- Soil quality improvement and maintenance through soil amendments and creation of a microbial community.
- Tree planting and preservation.
- Rerouting of rooftop drainage pipes to drain rainwater into rain barrels, cisterns, or permeable areas instead of the storm sewer.

Storm water treatment would consist of the construction of permeable pavement for the hammerhead driveway, bioswale, and landscaped areas. The permeable areas, bioswale, and landscaped areas would treat and be able to attenuate storm water runoff. The roof drainage would be directed to the permeable pavement. The existing internal access road north of the project site would be removed and be incorporated with landscape thus providing additional permeable areas on the project site.

The constituent pollutants entering the campus and City storm drain systems with proposed project implementation would not substantively change in character compared to existing conditions on campus, as the proposed facilities are essentially the same as existing facilities on site and elsewhere on campus. In addition, as required by PP 4.8-1 and PP 4.8-3(d), the proposed project would comply with all applicable water quality requirements, including NPDES Phase I requirements (General Construction Permit), as described above, and Phase II Small MS4 General Permit requirements. Therefore, operation of the proposed project would not violate any water quality standards or otherwise substantially degrade water quality. There would be a less than significant impact related to surface water quality with incorporation of PP 4.8-1 and PP 4.8-3(d), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed Project would have a less than significant impact related to (1) violating water quality standards or waste discharge requirements and (2) otherwise substantially degrading water quality with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) 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 (e.g., the production rate of	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

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### ***Discussion***

The analysis of Impact 4.8-2 in the 2005 LRDP EIR concluded that, with implementation of PS Conservation 5 and PP 4.8-2(a) through PP 4.8-2(c), there would be a less than significant impact related to substantial depletion of groundwater supplies or interference with groundwater recharge. The Riverside area is located within the Upper Santa Ana Valley Groundwater Basin, and the UCR campus including the project site is located near the southeastern edge of the Riverside-Arlington Subbasin (Subbasin). Groundwater in the Subbasin is replenished by infiltration from the 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.

As discussed in Section V.18, Utilities and Service Systems, of this IS/MND, implementation of the PGEF is estimated to use approximately 7,064,423 gallons of water per year (approximately 19,355 gallons per day). The demand for potable water resulting from the proposed project could indirectly increase demand for groundwater, as the Riverside Public Utilities (RPU) supplies domestic water to the campus. The RPU utilizes groundwater wells for potable water. It should be noted that the proposed project incorporates PP 4.8-2(a), which requires implementation of water conservation measures to reduce potable water consumption, and PP 4.8-2(b), which requires the campus to promptly detect and repair leaks in water and irrigation pipes.

As stated in the 2005 LRDP Amendment 2 EIR, the RPU has indicated that it does not anticipate any problems in providing adequate water supply to remaining and new development on the UCR campus. Therefore, 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 such, implementation of the proposed project would not substantially deplete groundwater supplies, which is consistent with the findings of the LRDP EIR.

As identified in the 2005 LRDP EIR, the UCR campus is not a designated groundwater recharge area for the Subbasin, nor does the campus serve as a primary source of groundwater recharge within the Subbasin. The soils underlying the East Campus, including the project site, are designated as Class D, which is the least-permeable soil type. Therefore, the increase in the impervious surface area on the project site would not substantially interfere with groundwater recharge. Therefore, there would be a less than significant impact related to groundwater recharge with incorporation of PP 4.8-2(a) and PP 4.8-2(b), which is consistent with the findings of the LRDP EIR.

### ***Additional Project-Level Mitigation Measures***

None required.

### ***Level of Significance***

The proposed project would have a less than significant impact related to substantial depletion of groundwater supplies; it would have a less than significant impact related to interference with groundwater recharge such that there would be a net deficit in aquifer volume or lowering of the local groundwater table with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) 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 which would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) 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 which would result in flooding on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Would the project 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impacts 4.8-3 through 4.8-5 in the 2005 LRDP EIR concluded that, with implementation of PS Land Use 2 and 3, PS Open Space 1 through 5, PS Conservation 1 through 3, and PP 4.8-3(a) through 4.8(e), there would be a less than significant impact related to alteration of existing drainage patterns and storm drain system capacity.

As described in the 2005 LRDP EIR, the UCR campus is located within two sub-watersheds of the Upper Santa Ana River Watershed, generally divided by the I-215/SR-60 freeway. Most of the East Campus, including the project site, drains into the University Arroyo Watershed. Major storm drainages on campus, including natural drainages, are shown in Figure 4.8-3 of the 2005 LRDP EIR. There are no natural channels within the project site. An unnamed drainage feature flow line is located approximately 54 feet east of the project site in the open space area. The unnamed drainage drains approximately 170 feet northeast of the project site into a Detention Basin (see **Figure 9**). The proposed project would avoid the unnamed drainage feature, flow line, and Detention Basin as these areas are in the No Impact Zone as shown on **Figure 5**. The nearest major storm drain that would serve the project site extends along East Campus Drive. Currently, storm water runoff from the site drains west to an existing curb inlet/via sheet flow to the curb and gutter along East Campus Drive.

General sheet flow conditions would be maintained and the site would be designed with retention features and permeable areas to ensure runoff from regular rain events are retained on site. The proposed project would include permeable pavements, bioswale, and landscaped areas to allow for infiltration and other BMP treatments to allow as much pervious surface area on the project site. The on-site storm drain system would collect roof runoff and surface drainage via a series of drain in-lets. Additionally, the project is subject to NPDES requirements; areas of one acre or more of disturbance are subject to preparing and implementing an SWPPP for the prevention of runoff during construction activities. Consistent with existing conditions, storm water runoff from the project site would discharge into the East Campus’ existing storm drain system. Storm water flows from the project site would continue to discharge to the storm drain in East Campus Drive and

would not directly enter a natural channel or drainage. The proposed project would not alter the course of a stream or river.

Furthermore, as discussed above, the proposed project incorporates PP 4.8-1, which requires compliance with applicable water quality regulations to manage storm water runoff during construction and operation with appropriate BMPs and to ensure that drainage from the project site does not result in erosion or contribute pollutants to runoff. The proposed project also incorporates PS Conservation 2 by designing the PGEF building within previously disturbed area, maintaining existing landscape to the extent feasible, and incorporating appropriate SWPPP and BMPs to prevent stormwater runoff. Per PP 4.8-3(e), prior to the time of design approval, the proposed project will be reviewed to ensure that project runoff would not exceed the capacity of the existing storm drain system. Therefore, the proposed project would result in less than significant impacts related to (1) substantial alteration of existing drainage patterns and the potential to cause substantial erosion or flooding on or off site; (2) increased volumes of runoff that could exceed the capacity of the existing UCR or City of Riverside storm drain systems; or (3) substantial additional sources of polluted runoff with incorporation of PS Conservation 2, PP 4.8-1, and PP 4.8-3(e). This determination is consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to (1) altering the existing drainage pattern in a manner that would result in substantial erosion or siltation on or off site; (2) altering the existing drainage pattern or substantially increasing the rate or amount of surface runoff in a manner that would result in flooding on or off site; and (3) creating or contributing to runoff water that would exceed the capacity of existing or planning storm water drainage systems or provide substantial additional sources of polluted runoff with incorporation of the PS and PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
g) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j) Inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.8-8 through 4.8-11 in the 2005 LRDP EIR concluded that, with implementation of PS Open Space 1 and 2, PP 4.8-3(e), PP 4.8-10, and MMs 4.8-9(a) and 4.8-

9(b), there would be no impact related to placing housing within a 100-year flood hazard area and less than significant impacts related to placing structures within a 100-year flood hazard area; flooding as a result of failure of a levee or dam; or inundation by seiche, tsunami, or mudflow.

Based on review of Figure 4.8-2, FEMA Map, of the 2005 LRDP EIR, and subsequent 2010 Letter of Map Revision (LOMR), the project site is not within the Federal Emergency Management Agency's (FEMA's) 100-year flood hazard area and would not, therefore, result in the placement of housing or other structures in a flood hazard area. Therefore, the proposed project would not result in any impacts related to the 100-year flood hazard area.

The nearest upstream dam to the campus is the Seven Oaks Dam, located on the Santa Ana River in the upper Santa Ana Canyon about 8 miles northeast of the City of Redlands and approximately 24 miles upstream of the City of Riverside. As discussed in the 2005 LRDP EIR, given the distance between the campus and the Santa Ana River (more than three miles), the potential for flooding to occur on the project area as the result of a catastrophic failure of the Seven Oaks Dam is remote. In addition, the potential for catastrophic failure of the Santa Ana Pipeline (which is operated by the California State Department of Water Resources and is located north and east of the campus along Watkins Drive at the base of the Box Springs Mountains) to affect campus lands is also considered remote. Furthermore, the area east of the project site includes open space, an unnamed drainage feature, the drainage flow line, and a Detention Basin. Any potential flooding in this area would not affect the project site as the site is located more than 20 feet above the open space area. Therefore, implementation of the proposed project would not expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam, and there would be no impact.

As discussed in the 2005 LRDP EIR, the potential for the campus to be affected by a seiche or tsunami is considered extremely remote given the inland location of the campus and the distance to any large water bodies. In addition, 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. As previously discussed, the project site is situated more than 20 feet above the open space area and the proposed project would avoid the open space areas to the east of the project site where the drainage, drainage flow line, and the Detention Basin are located as noted as No Impact Zone in **Figure 5**. Thus, the proposed project would not be susceptible to mudflows. Therefore, implementation of the proposed project would not result in potential inundation by a seiche, tsunami, or mudflow, and there would be less than significant impact consistent with the findings of the LRDP EIR.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

The proposed project would have no impacts related to (1) placement of housing or structures within a 100-year flood hazard area; (2) exposure of people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam; and less than significant impacts related to (3) inundation by seiche, tsunami, or mudflow. The proposed project impacts were adequately addressed in the LRDP EIR.

## 10. LAND USE AND PLANNING

The analysis of land use and planning is tiered from the 2005 LRDP EIR and, as applicable, the 2005 Amendment 2 EIR and was addressed in Section 4.9, Land Use and Planning, of both documents. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to land use and planning include (1) demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed; (2) construction of a new, 2-story, approximately 38,000 gsf PGEF project facility; (3) introduction of new landscaping and hardscape; and (4) consistency with the 2005 LRDP, as amended.

Currently, there is a maximum of 10 personnel working actively on the Lathhouse B facility at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel.

The following applicable PSs and PPs were adopted as part of the 2005 LRDP Amendment 2 and/or UCR 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

- 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 a compact and contiguous academic core and desired development densities, strategies will include infill sites in the developed East Campus academic core as well as expansion to the West Campus academic zone immediately adjacent to the I-215 and SR-60 freeway.
- 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 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 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.
- PP 4.9-1(a)** The Campus shall provide design architects with the 2007 Campus Design Guidelines and instructions to implement the Guidelines, including those sections related to use of consistent scale and massing, compatible architectural style, complementary color palette, preservation of existing site features, and appropriate site and exterior lighting design. *(This is identical to Aesthetics PP 4.1-1.)*

**PP 4.9-1(b)**

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

**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.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project physically divide an established community?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

Based on the IS prepared for the 2005 LRDP Amendment 2 EIR, it was concluded that development of the campus under the 2005 LRDP, as amended, would have no impact related to division of an established community. This issue was not carried forward for further analysis in the EIR. The 2005 LRDP, as amended, guides development within the campus boundaries, such as the proposed project, and does not therefore affect the established community outside the UCR campus. Consistent with the findings of the 2005 LRDP Amendment 2 EIR, no impact would occur consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to physically dividing an established community. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Would the project conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the LRDP, general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## ***Discussion***

The analysis of Impact 4.9-2 in the 2005 LRDP Amendment 2 EIR concluded that development of the UCR campus under the 2005 LRDP, as amended, which incorporates relevant PSs, PPs, and MMs would not conflict with applicable local or regional land use plans, policies, or regulations.

Following is an evaluation of the proposed project's consistency with the 2005 LRDP, as amended, and applicable local and regional plans, policies, or regulations.

**LRDP Land Use Designation.** The Land Use Plan included in the 2005 LRDP, as amended, (shown in Figure 3.0-6 of the 2005 LRDP Amendment 2 EIR and Figure 13 of the 2005 LRDP Amendment 2) identifies 12 general categories of land use for development within the UCR campus boundaries. The project site is designated as "Academic." The Academic land use category allows for various Academic and support uses. Specifically, the Land Use Section of the 2005 LRDP Amendment 2 states that instruction and research uses comprise the vast majority of academic uses on the university campus. The proposed project does not conflict with the Academic land use designation, and is consistent with the guidance provided in the LRDP for the location of support uses.

**LRDP Square Footage.** The 2005 LRDP, as amended, projected total building space on campus to be approximately 14.9 million gsf by 2020/2021, including approximately 3.1 million gsf allocated to the SOM. As identified in Table 3.0-5 of the 2005 LRDP Amendment 2 EIR, of this amount, there is a total of 5.5 million gsf allocated to "Academic" uses (which includes the PGEF project). The existing on-campus development is approximately 7.2 million gsf, and approximately 235,350 gsf of net new development which has been approved but not yet constructed. Therefore, there is approximately 7.46 million gsf of development allocation remaining on campus. The proposed project involves a net increase of up to 24,894 gsf of net new development, which is well within the remaining building allocation for "Academic" uses and total building space on campus.

**LRDP Population.** The 2005 LRDP, as amended, projected a total enrollment of 25,000 students and 16,393 associated faculty, staff, and visitors for a total campus population of 41,393 by the academic year 2020/2021. Excluding the category of "other individuals",<sup>10</sup> there are projected to be 32,916 students, faculty, and academic staff and non-academic staff. For comparison, the current student population on campus based on the fall 2017 enrollment is 23,278 students (UCR 2018). Additionally, there are approximately 8,306 faculty, staff, and staff personnel, for a total population of 31,227 individuals (not including other individuals).

The proposed project would provide greenhouse research opportunities on campus and would slightly increase the number of potential new positions (20 new positions) from existing conditions. These positions are expected to be filled by the local labor pool, and this increase would be within the growth projections for the campus, as identified in the 2005 LRDP, as amended. The student positions would be filled by students already on campus.

**LRDP Planning Strategies.** The 2005 LRDP, as amended, includes PSs for the following issues to guide expansion and development of the UCR campus: land use, circulation and parking, open space and landscape, and campus and community. These planning strategies are required to be implemented with each development project on campus and have been specifically identified in

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<sup>10</sup> Includes campus visitors, patients, childcare students, student family members (living on campus), daytime extension students, ASUCR, KUCR, and Highlander non-student staff, vendors, and construction workers.

the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR, along with general development strategies. Key PSs that have been incorporated into the project are identified for each topical issue in this IS/MND. Notably, as identified in the “Land Use” section of the 2005 LRDP, as amended, in order to achieve campus goals and to accommodate the program anticipated to be associated with an enrollment of 25,000, expansion of the campus and its facilities would be guided by a number of Land Use PSs. Most relevant to the proposed project are the following strategies that are incorporated into the proposed project:

- Achieve academic core densities of 1.0 FAR or higher on the East Campus in order to achieve a balance of academic land area versus other required uses within the existing land base.
- In order to achieve a compact and contiguous academic core and desired development densities, strategies would include infill sites in the developed East Campus academic core as well as expansion to the West Campus academic zone immediately adjacent to the I-215/SR-60 freeway.

These strategies (PS Land Use 1 and PS Land Use 2) are incorporated into the proposed project. The proposed project involves the demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed; removal of asphalt and concrete pavement throughout the project site; removal of walls, removal of gutter, removal of utilities; and removal of landscape along the northern, southern, and western portion of the project site. Subsequent to demolition activities, UCR proposes construction of a new PGEF project and associated landscape, wall, and hardscape improvements primarily within the previously disturbed areas of the site. As required by existing regulations, soil erosion, sedimentation, and stormwater runoff from the project site during construction would be controlled through the use of several BMPs, including the use of sandbags as barriers. The construction site would be encircled by sandbags, and stabilized driveways would be provided at construction entrance and exit areas.

Circulation and Parking and Campus PSs relevant to the proposed project include the following:

- Provide a continuous network of bicycle lanes and paths.
- Provide bicycle parking at convenient locations.
- Provide strong connections within the campus and its edges to promote walking, bicycling, and transit use, rather than vehicular traffic.

*These strategies (PS Transportation 3 and PS Transportation 5) are incorporated into the proposed project and are further discussed in Section V.16, Transportation and Traffic, of this IS/MND. As shown on the conceptual site plans for the proposed project (refer to **Figure 5**), in Section II, Project Description, of this IS/MND, the proposed project has been organized to maintain the existing campus pedestrian and bicycle circulation. Pedestrians and bicyclists arriving to the site would have access from East Campus Drive and Eucalyptus Drive. Additionally, there are existing on-street striped bike lanes along East Campus Drive adjacent to the project site, which would be maintained with the proposed project.*

*Crosswalks are proposed at East Campus Drive to connect the project site to the existing sidewalks at Eucalyptus Drive. An ADA compliant pathway is proposed that would connect*

*from the project site's frontage along East Campus Drive to the PGEF building. A landing suitable for public transit pick-up may be constructed along East Campus Drive in front of the proposed accessible pedestrian pathway, as required for safety and ADA compliance. Bicycle racks would be provided at the PGEF building.*

The Open Space and Landscape PS relevant to the proposed project is as follows:

- 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 protection against erosion.
- 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.

*These strategies (PS Open Space 1 and PS Open Space 3) is incorporated into the proposed project, as further discussed in Section V.1, Aesthetics; Section V.4, Biological Resources; and Section V.9, Hydrology and Water Quality, of this IS/MND. The project site is along East Campus Drive near the central area of the East Campus and is adjacent to open space area to the east. An unnamed drainage feature flow line is located approximately 54 feet east of the project site in the open space area. The unnamed drainage drains approximately 170 feet northeast of the project site into a Detention Basin (see **Figure 9**). The proposed project would avoid the open space area as shown as No Impact Zone in **Figure 5**. Thus, implementation of the proposed project would protect the open space area, unnamed drainage feature, the drainage flow line, and Detention Basin.*

#### University of California, Riverside Campus Design Guidelines

The UCR Campus Design Guidelines include site and architectural guidelines to establish the basic premises and clear intent for creative design decisions that are made for projects on campus; the Campus Design Guidelines are not intended to be prescriptive. The site guidelines address planting, paving, site lighting, furnishings, grading and rainwater management, circulation systems, and campus-wide signage. The architectural guidelines address outdoor circulation; building orientation and entrances; relationship of interior to exterior at ground floor; building massing and articulation; building materials and color palette; and building response to climate. A description of the proposed project components is provided in Section II, Project Description, of this IS/MND.

The proposed project incorporates PP 4.9-1(a), which ensures that the Campus Design Guidelines and instructions to implement the Guidelines are taken into consideration, 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. As described in Section II, Project Description, and further analyzed in Section V.1, Aesthetics, of this IS/MND, the overall character of the proposed project has been developed to provide a contemporary plant growth facility that meets the requirements of a high-level research university project while not substantially degrading the existing visual character of the site and surrounding area. The building materials and color palette to be used would adhere to the Campus Design Guidelines to be visually harmonious with the UCR campus as well as the immediately surrounding buildings (as required by PP 4.1-1/PP 4.9-1[a]) and would be reviewed as part of the project-specific design review process and through approval of construction documents (refer to

MM 4.1-3(a)).

Additionally, the proposed project incorporates PP 4.9-1(b), which ensures that the design team has developed a project-specific landscape plan consistent with the Campus Design Guidelines with respect to the selection of plants, retention of existing trees, and use of water conserving plants, where feasible. Landscape is proposed along the northern, southern, and western portion of the project site.

Incorporation of PPs 4.9-1(a) and 4.9-1(b) into the proposed project ensures that the intent of the Campus Design Guidelines related to site and architectural guidelines have been met.

### Regional and Local Plans

The proposed project would involve a net increase of new development on campus of up to approximately 24,894 gsf. The proposed project would not be considered regionally significant by SCAG based on the established criteria in Section 15206 of the *CEQA Guidelines*, which is applied by SCAG to determine regional significance (SCAG 2018). Therefore, an assessment of the proposed project's consistency with SCAG's regional plans is not required.

As addressed in Section V.9, Hydrology and Water Quality, of this IS/MND, the proposed project is required to comply with all applicable water quality requirements established by the Santa Ana RWQCB and SWRCB. Therefore, consistent with the findings of the 2005 LRDP Amendment 2 EIR, the proposed project would be consistent with the Basin Plan. As discussed in Section V.3, Air Quality, of this IS/MND, the proposed project would also be consistent with the AQMP. Refer to the analysis for Threshold V.10d below regarding the MSHCP.

UCR is part of the UC, a constitutionally created entity of the State of California. As a constitutional entity, the UC 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. UCR participated in the development of the current City of Riverside General Plan and the University Neighborhood Plan in an effort to coordinate planning efforts between the City of Riverside and the campus. The City of Riverside General Plan, which includes the campus, has identified UCR as a public facility/institutional land use. The proposed project is consistent with this land use designation, consistent with the findings of the 2005 LRDP Amendment 2 EIR.

In summary, consistent with the finding under Impact 4.9-2 of the 2005 LRDP Amendment 2 EIR, there would be a less than significant impact related to conflicts with an applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project adopted for the purpose of avoiding or mitigating an environmental effect with incorporation of PS Land Use 1, PS Land Use 2, PS Transportation 3, PS Transportation 5, PS Open Space 1, PS Open Space 3, PP 4.9-1(a), PP 4.9-1(b), and MM 4.1-3(a).

### ***Additional Project-Level Mitigation Measures***

None required.

### ***Level of Significance***

The proposed project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the proposed project; therefore, no impact would result with incorporation of the PSs, PPs, and MM noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Would the project conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Discussion

A MSHCP was approved and adopted by Riverside County in 2003 as a comprehensive, multijurisdictional Habitat Conservation Plan 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 also serves as a Natural Communities Conservation Plan under the Natural Communities Conservation Planning Act of 1991. UCR is not a Permittee to the Western Riverside MSHCP and therefore is not subject to the Conservation efforts established in the MSHCP. Nonetheless, the following analysis discusses how the proposed project complies with the MSHCP.

Sections of Criteria Cells 634 and 719 of the MSHCP include portions of the UCR campus; however, the project site is not within these Criteria Cells and therefore is not subject to any Conservation efforts. There is a potential riverine resource (unnamed drainage feature), whose flow line is located approximately 54 feet east of the project site. The unnamed drainage feature flow line, dominated by non-native grassland vegetation, drains approximately 170 feet northeast of the project site into a Detention Basin (see **Figure 9**). The proposed project is located outside of the unnamed drainage feature, the drainage flow line, and Detention Basin and would avoid these features. No suitable habitat for least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), or western yellow-billed cuckoo (*Coccyzus americanus*) was detected within or immediately adjacent to the project site during the time of site assessment (Appendix B). Given the avoidance to the unnamed drainage feature, the drainage flow line, and Detention Basin (see **Figure 5**), the project does not conflict with Section 6.1.2 of the MSHCP.

The project site does not occur within a predetermined Survey Area for the MSHCP criteria area species, mammals, amphibians, or narrow endemic plant species. A small 0.01-acre eastern region of the project site occurs within a predetermined survey area for burrowing owl (*Athene cunicularia*), however, no burrowing owl burrows, refugia, or foraging habitat were observed during the time of the site assessment by Cadre (Appendix B). Therefore, no focused surveys were warranted for burrowing owls. As such, the proposed project does not conflict with Sections 6.1.3 and 6.3.2 of the MSCHP. The project site is not located adjacent to an existing or proposed MSHCP Conservation Area. Thus, the project is not subject to the MSHCP Urban/Wildlands Interface guidelines and does not conflict with Section 6.1.4 of the MSHCP.

The 2005 LRDP EIR concluded that development under the 2005 LRDP, of which the proposed project is a part, would not conflict with the MSHCP, and there would be no impact. Therefore, the proposed project would have no impact related to conflict with the MSHCP, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to conflict with Western Riverside MSHCP. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Would the project create other land use impacts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.9-1 in the 2005 LRDP EIR concluded that, with implementation of PS Land Use 1 through 7, PS Open Space 1 through 7, PS Campus and Community 1 through 3, PS Transportation 1 through 6, PS Conservation 1 through 4, PS Development Strategy 1 through 3, and PPs 4.9-1(a) through (c), there would be a less than significant impact related to land use incompatibilities.

As depicted on Figure 13 of the 2005 LRDP Amendment 2, the project site is in an area designated as “Academic” which allows for the development of the proposed project. The project site is currently developed with Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed. Similar to the existing structures on site, most of the plant growth facilities at UCR were constructed more than 50 years ago and are currently in poor condition due to heavy use and advanced age. To remain competitive in crop and agricultural systems biology, and to become internationally preeminent in agricultural research, UCR needs contemporary plant growth facilities that meet the requirements of a high-level university research program.

The UCR Campus Planning Office and CNAS recently worked together to define the future needs for plant growth research and to develop an implementation plan for new facilities. The Plant Growth Environments & Support Facilities Relocation Study dated April 25, 2016 provides future facility recommendations and guidelines. The proposed PGEF project is the first facility to move forward into the planning, design, and construction stages of the projects as defined in the Plant Growth Environments & Support Facilities Relocation Study.

Because the proposed project would be a similar use to that of existing conditions and is consistent with the land use designation on site, no impacts related to land use impacts would occur with implementation of the proposed project, consistent with the findings in the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to other land use impacts. The proposed project impacts were adequately addressed in the LRDP EIR.

## 11. MINERAL RESOURCES

Mineral resource issues were addressed in the IS prepared for the 2005 LRDP EIR. There are no relevant elements of the proposed project related to Mineral Resources. Additionally, there are no relevant PSs, PPs, or MMs adopted as part of the 2005 LRDP EIR.

### Project Impact Analysis

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### *Discussion*

The project site is currently developed with Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed and does not contain a mineral resource recovery site.

As identified in the IS for the 2005 LRDP EIR, there are no mineral resources of regional or Statewide importance known to exist on the UCR campus. Also, no mineral resource recovery activities occur on the UCR campus, and no mineral resource recovery sites are delineated in the General Plans for the County and City of Riverside or the University Community Plan, which covers the area around the campus (City of Riverside, 2007; County of Riverside 2015). Therefore, consistent with the findings of the 2005 LRDP EIR, implementation of the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State, and no impact would occur, consistent with the findings of the LRDP EIR.

### *Additional Project-Level Mitigation Measures*

None required.

### *Level of Significance*

The proposed project would have no impacts related to (1) the availability of a known mineral resource that would be of value to the region and the residents of the State or (2) the availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. The proposed project impacts were adequately addressed in the LRDP EIR.

## 12. NOISE

The analysis of noise is tiered from the 2005 LRDP EIR (as it relates to development in the East Campus) as supplemented and updated by the 2005 LRDP Amendment 2 EIR (as it relates to

increased noise from traffic generated by the 2005 LRDP Amendment 2); it was addressed in Section 4.10, Noise, of those documents. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to noise and vibration include the use of diesel-powered and other heavy equipment during construction. The proposed project would include construction activities at the project site, which would involve demolition, grading, and other construction-related activities.

With respect to operations, under existing conditions, the Lathhouse B facility and plant growth houses are accessible during typical campus business hours, Monday through Friday from about 8:00 AM to 5:00 PM. Restricted access is available outside of these hours based on research activity needs. The same hours of operation would occur with implementation of the proposed project.

Currently, there is a maximum of 10 personnel working actively within the Lathhouse B facility at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. Additionally, the proposed project includes use of on-site stationary equipment such as packaged air handlers within the first-floor mechanical room, evaporative cooling and fan coil units for the greenhouse, and an approximately 550 kilowatt/450 kVA diesel standby generator with an approximately 160-gallon belly tank on the east side of the structure. An approximately 600-square foot service yard is proposed east of the PGEF project.

The following applicable PPs and MM were adopted as part of the 2005 LRDP Amendment and/or 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

**PP 4.10-1(a)**

UCR will incorporate the following siting design measures to reduce long-term noise impacts:

- (i) Truck access, parking area design, and air conditioning/refrigeration units will be designed and evaluated when planning specific individual new facilities to minimize the potential for noise impacts to adjacent developments.
- (ii) Building setbacks, building design and orientation will be used to reduce intrusive noise at sensitive student residential and educational building locations near main campus access routes, such as Blaine Street, Canyon Crest Drive, University Avenue, and Martin Luther King Jr. Boulevard. Noise walls may be advisable to screen existing and proposed facilities located near the I-215/SR-60 freeway.
- (iii) Adequate acoustic insulation would be added to residence halls to ensure that the interior Ldn would not exceed 45 dBA during the daytime and 40 dBA during the nighttime (10 PM to 7 AM) in rooms facing major streets.

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

**PP 4.10-2** The UCR Campus shall limit the hours of exterior construction activities from 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday when necessary. Construction traffic shall follow transportation routes prescribed for all construction traffic to minimize the impact of this traffic (including noise impacts) on the surrounding community.

**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.

**PP 4.10-7(a)** To the extent feasible, construction activities shall be limited to 7:00 AM to 9:00 PM Monday through Friday, 8:00 AM to 6:00 PM on Saturday, and no construction on Sunday and national holidays, as appropriate, in order to minimize disruption to area residences surrounding the campus and to on campus uses that are sensitive to noise.

**PP 4.10-7(b)** The Campus shall continue to require by contract specifications that construction equipment be required to be muffled or otherwise shielded. Contracts shall specify that engine-driven equipment be fitted with appropriate noise mufflers.

**PP 4.10-7(c)** The Campus shall continue to require that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors.

**PP 4.10-7(d)** The Campus shall continue to conduct regular meetings, as needed, with on campus constituents to provide advance notice of construction activities in order to coordinate these activities with the academic calendar, scheduled events, and other situations, as needed.

**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.

**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.

As identified in Section V.3, Air Quality, of this IS/MND, the proposed project also incorporates PS Campus and Community 4 (promote campus-wide non-vehicular transportation), PS Transportation 3 (campus-wide bicycle network to connect to off-campus bicycle routes), and PP 4.3-1 (campus-wide implementation of a transportation demand management program), which all serve to reduce vehicular trips.

**Noise-Sensitive Receptors**

Noise-sensitive land uses include those uses where noise exposure could result in health-related risks to individuals and places where quiet is an essential element of the intended purpose. Residential dwellings are of primary concern; land uses such as parks, historic sites, cemeteries, and some recreation areas are considered sensitive to increases in exterior noise levels. Noise-sensitive land uses identified in the 2005 LRDP Amendment 2 EIR are residential areas and a motel. However, recreational uses are also identified for construction noise impact analysis. The nearest residences to the project area are on-campus residences (West Lothian Residence Hall) approximately 1,095 feet to the north of the project site and off-campus residences on Frost Court, approximately 1,410 feet southeast of the project site. The closest buildings to the PGEF project are lathhouses to the north, and greenhouses to the south and west, which are not noise-sensitive receptors.

**Existing Noise Levels**

The dominant source of noise in the project area is vehicle traffic on East Campus Drive and Eucalyptus Drive, which is adjacent to the project site to the west. When noise measurements were taken for the 2005 LRDP EIR, noise levels along East Campus Drive near glasshouses was between 53.4 to 83.5 A-weighted decibels (dBA) on the Sound Energy Equivalent Noise Level (Leq), with an average 71.0 Leq. The predominant source of noise was from the greenhouse equipment and traffic along East Campus Drive.

The segment of East Campus Drive along the project’s frontage is not the main entrance to the UCR campus. Currently, vehicles entering and leaving the campus are distributed by the various circulation routes on campus; vehicles traveling pass the project site through East Campus Drive would likely be visiting the East Campus area. Implementation of the proposed project is anticipated to add no more than 20 personnel which is a nominal increase in potential vehicular trips along East Campus Drive. Since the proposed project is not doubling the amount of traffic which would result in a 3 dBA noise level increase, it can be assumed that the existing noise levels are similar to that of existing noise conditions.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The UC is not subject to municipal regulations, such as the County and City General Plans or noise ordinances. As identified in the 2005 LRDP EIR, Federal agencies that have developed noise standards include the Federal Highway Administration, the Department of Housing and Urban Development, the Federal Interagency Committee on Urban Noise, and the Federal Aviation Administration. None of these federal noise standards are applicable to the UCR campus. Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new residences, hotels, motels, dormitories, and apartment houses. The PGEF project consists of a greenhouse and the State Title 24 Sound Transmission Control requirements are not applicable to the proposed project. In addition, there are no University noise standards applicable to the proposed project. Consistent with PP 4.10-1(a) and PP 4.10-6, the design and placement of the PGEF building including access, parking, and on-site stationary equipment have been considered to minimize potential noise impacts onto adjacent developments. Therefore, there would be less than significant noise impacts with incorporation of PP 4.10-1(a) and PP 4.10-6 consistent with the findings of the LRDP EIR.

**Additional Project-Level Mitigation Measures**

None required.

**Level of Significance**

The proposed project would have less than significant noise impact to exposure of persons to or generation of noise levels in excess of standards established in any applicable plan or noise ordinance, or applicable standards of other agencies with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR adopt the following thresholds for “excessive” vibrations: 65 vibration decibels (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.

**Short-Term (Construction Vibration)**

The analysis of Impact 4.10-3 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR concluded that development on campus would result in less than significant short-term impacts to off-campus persons from vibration during construction, including vibration from heavy trucks. The analysis of Impact 4.10-2 in the 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP, as amended, could result in significant and unavoidable impacts to on-campus sensitive buildings located in close proximity to the construction sites from excessive

groundborne vibration.

Construction of the proposed project is anticipated to begin in April 2019 with completion in May 2020. Construction activities would include demolition for approximately 10 days, grading for approximately 7 days, building construction and utility installation for approximately 9 months, paving for approximately 5 days, and architectural coating for approximately 8 days. In compliance with MM 4.10-2, UCR will notify academic facilities within 300 feet of the construction schedule and activities to ensure occupants and researchers can take necessary precautionary measures to avoid negative effects to their activities and/or research.

#### *On-Campus Receptors*

There are no vibration-sensitive uses (e.g., research buildings or residential buildings) immediately adjacent to the project site. Lathhouses and greenhouses are located to the north, south, and west of the project site with the closest facility located approximately 20 feet from the project site. The Fawcett Laboratory is located approximately 165 feet southwest of the project site.

Construction activities would include building and hardscape demolition and removal, excavation and grading, construction of the PGEF building, and paving. The proposed project would not include pile driving or blasting, which are the construction activities that generate the highest vibration levels. Heavy trucks would transport materials to and from the project area. During the demolition and grading phases, the operation of heavy or large construction equipment such as bulldozers, excavators, and loaded trucks have the potential to generate perceptible vibration levels at nearby buildings.

As described under the analysis of Impact 4.10-2 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR, where construction occurs more than 50 feet from campus classroom buildings, office buildings, and student housing buildings or where construction occurs more than 300 feet from research buildings with vibration-sensitive equipment, the impact would be less than significant. Based on the information presented in Table 4.10-4 of the LRDP EIRs, Vibration Levels for Construction Equipment, vibration levels from large bulldozers and loaded trucks could reach up to 86 to 87 VdB at buildings located within 25 feet of the equipment in use. This would exceed the 83 VdB threshold for institutional buildings. At a distance of 50 feet, vibration levels for this equipment would not exceed 81 VdB.

Although the nearest lathhouses and greenhouses to the north and south of the project site is approximately 20 feet from the project site's boundary, removal and replacement of landscape is proposed along the northern and southern portion of the project site which does not necessitate heavy duty construction equipment that would result in substantial vibration levels to the adjacent facilities. The proposed demolition and grading would occur at 50 feet or greater from the nearest existing campus facilities where noted above, the vibration levels from this distance would not exceed 81 VdB. The proposed project would incorporate PP 4.10-2 and PP 4.10-7(a) limiting the hours of construction where necessary. MM 4.10-2 from the 2005 LRDP Amendment 2 EIR is incorporated into the project and requires notification of affected persons about the planned construction in order to reduce potential vibrational noise impacts to less than significant levels with incorporation of PP 4.10-2, PP 4.10-7(a), and MM 4.10-2, consistent with the findings of the LRDP EIR. .

### *Off-Campus Receptors*

Potential vibration impacts from construction activities to off-campus uses are addressed under the analysis of Impact 4.10-3 in 2005 LRDP EIR. The nearest off-campus residential uses to the project area are single-family homes on Frost Court, approximately 1,410 feet southeast of the project site. Based on Table 4.10-8 of the 2005 LRDP EIR, vibration levels at the nearest off-campus residences from construction activities at the project area would be less than 75 VdB, which is the highest vibration level at 100 feet. No significant construction-related vibration impact to off-campus uses would result, which is consistent with the findings of the 2005 LRDP EIR.

Heavy trucks would transport materials to and from the campus when construction activities occur. Demolition would include the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed; removal of asphalt and concrete pavement throughout the project site; removal of walls, removal of gutter, removal of utilities; removal of landscape along the northern, southern, and western portion of the project site; and approximately 1,210 cubic yards of export materials. It is estimated there would be a range of approximately 4 to 28 construction workers/vendors trips per day at the project site during construction activities. It is assumed that construction traffic would use the I-215 freeway, University Avenue, to West Campus Drive, South Campus Drive, and East Campus Drive or the I-215 freeway, Martin Luther King Boulevard to Canyon Crest Drive, West Campus Drive, South Campus Drive, and East Campus Drive to access the project site. Pursuant to PP 4.14-2 from the 2005 LRDP Amendment 2 EIR, the construction schedules or major projects would be coordinated to adjust construction schedules, work hours, and access routes to the extent feasible in order to reduce construction-related traffic congestion. These trucks typically generate groundborne vibration velocity levels of around 63 VdB at 50 feet and could reach 72 VdB where trucks pass over bumps in the road; these vibration levels would be less than the Federal Railway Administration's 80 VdB vibration impact threshold for residences referenced in Table 4.10-8 of the 2005 LRDP Amendment 2 EIR. Therefore, construction of the proposed project would not expose occupants of on- or off-campus buildings to excessive groundborne vibration levels from heavy trucks, and this impact would be less than significant with incorporation of PP 4.14-2, consistent with the findings of the LRDP EIR.

### Operational Vibration

As described in the 2005 LRDP EIR, the existing campus facilities are not a major source of vibration. The proposed project would include activities similar to that of existing conditions (greenhouse operations). As such, implementation of the proposed project would not result in vibration levels that could expose persons on- or off-campus to excessive groundborne vibration or noise levels. This impact would be less than significant, consistent with the findings of the 2005 LRDP EIR, as amended.

### ***Additional Project-Level Mitigation Measures***

None required.

### ***Level of Significance***

The proposed project would have a less than significant impact related to vibrational noise levels with incorporation of the PPs and MM noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impacts 4.10-5 and 4.10-6 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP, as amended, would result in less than significant impact for long-term operational impacts as it relates to on- or off-campus ambient roadway (traffic) noise levels and on- or off-campus ambient stationary source noise levels.

The 2005 LRDP Amendment 2 EIR addressed potential traffic-related noise impacts associated with the remaining development under the 2005 LRDP, as amended, which includes the proposed project. For purposes of analysis in this IS/MND, it is expected that the proposed project could result in an increase of 20 personnel from existing conditions. These positions are expected to be filled by the local labor pool, and this increase would be within the growth projections for the campus. It is assumed that the change in vehicle trip generation associated with this minimal increase in population would be negligible and there would not be a perceptible change in traffic noise. The impact would be less than significant.

As discussed in Section V.16, Transportation and Traffic, of this IS/MND, under existing conditions, the existing personnel at the Lathhouse B facility are affiliated with UCR and either bike or walk, to the project site from other locations on campus or park at a nearby designated parking spot. While the proposed project would have a minimal increase in personnel, it is expected that they would continue to bike or walk to the project site or be assigned a designated parking spot at one of the nearby parking lots. The proposed project would incorporate PS Campus and Community 4 (promote campus-wide non-vehicular transportation), PS Transportation 3 (campus-wide bicycle network to connect to off-campus bicycle routes), and PP 4.3-1 (campus-wide implementation of a transportation demand management program), which all serve to reduce vehicular trips thereby minimizing traffic related noise.

As such, implementation of the proposed project would not have a substantial increase in traffic or traffic-related noise.

With respect to stationary sources of noise, proposed on-site stationary equipment include packaged air handlers, evaporative cooling and fan coil units for the greenhouse, and an approximately 550 kilowatt/450 kVA diesel standby generator with an approximately 160-gallon belly tank on the east side of the structure. As identified under the analysis of Impact 4.10-6 in the 2005 LRDP Amendment 2 EIR, the type of equipment currently installed on new on-campus buildings generates noise levels up to 66 dBA Leq, or 73 dBA Community Noise Equivalent Level (CNEL) if operating for 24 hours, when measured at 50 feet from the source. The nearest noise-sensitive receptors are on-campus residences (West Lothian Residence Hall) approximately 1,095 feet to the north of the project site and off-campus residences on Frost Court, approximately 1,410 feet southeast of the project site. The packaged air handlers would be enclosed within the first-

floor mechanical room; noise impacts related to the packaged air handlers are considered to be less than significant. The estimated noise level for the exhaust fans is anticipated to generate a noise level of approximately 65 dBA, which is similar to or less than other adjacent fan equipment noise levels located on the existing project site and adjacent sites. Given the on-site stationary sources' distance to the sensitive receptors and given that intervening structures that would provide noise attenuation, noise from the operation of the evaporative cooling and fan coil units and standby generator is considered to be less than significant. Additionally, the proposed on-site stationary equipment is similar to those of the stationary equipment to the north, south, and west of the project site as they are similar in use as that of the proposed project. Therefore, the noise generated by the on-site stationary sources would result in similar noise levels from the adjacent facilities.

Furthermore, consistent with PP 4.10-1(a) and PP 4.10-6, the design and placement of the PGEF building including access, parking, and on-site stationary equipment have been considered to minimize potential noise impacts onto adjacent developments. In summary, the proposed project would not result in substantial, permanent operational noise impacts. The impact would be less than significant with incorporation of PS Campus and Community 4, PS Transportation 3, PP 4.3-1, PP 4.10-1(a), and PP 4.10-6, which is consistent with the findings of the consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not have a substantial permanent increase in ambient noise levels in the project vicinity; impacts are considered to be less than significant with incorporation of the PSs and PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project (including construction)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.10-7 and 4.10-8 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP, as amended, would result in significant and unavoidable impacts related to on-campus ambient noise levels during construction and off-campus ambient noise levels during construction.

**On-Campus Receptors**

During construction, nearby noise-sensitive receptors would be exposed to occasional increased noise levels associated with the operation of heavy equipment (e.g., loaders and bulldozers) during the demolition and grading phase. The loudest piece of construction equipment anticipated during

construction activities are crane, dozers, and excavators measuring at 85 dBA at 50 feet (Caltrans 2006). For the purpose of this analysis and consistent with the 2005 LRDP EIR, noise impacts during construction would be considered significant if activities lasting more than 1 day would increase the ambient noise levels by 10 dBA Leq or more over a 1-hour period at any on-campus or off-campus noise-sensitive location.

The closest on-campus noise-sensitive receptors during grading would be the residences (West Lothian Residence Hall) located approximately 1,095 feet to the north of the project site. Construction noise level diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. Given the distance of 1,095 feet of the closest on-campus residence to the project site, the expected noise levels that could be heard from the residences from the loudest piece of construction equipment on site is less than 61 dBA. After applying an assumed 20 dBA exterior-to-interior noise reduction with all windows closed, the interior average noise levels due to construction would be 41 dBA Leq inside the building. Additional reduction would occur due to intervening buildings. It should be noted that construction equipment noise would not be constant because of the variations of power, cycles, and equipment location. Construction activities for the proposed project would result in a less than significant noise impact to on-campus sensitive receptors.

The proposed project incorporates PPs 4.10-2 and 4.10-7(a), which require hours of construction to be limited to 7:00 AM to 9:00 PM Monday through Friday and 8:00 AM to 6:00 PM on Saturday. Noise impacts would be minimized with PP 4.10-7(b), which requires the muffling or shielding of equipment, and PP 4.10-7(c), which requires that stationary construction equipment material and vehicle staging be placed to direct noise away from sensitive receptors. Additionally, per PP 4.10-7(d), UCR would coordinate the timing of the project construction activities with the academic calendar, scheduled events, and other situations, as needed.

#### Off-Campus Receptors

As previously noted, the nearest off-campus noise-sensitive receptors are residences on Frost Court, approximately 1,410 feet southeast of the project site. At this distance, construction activity noise levels from the site would be reduced by at least 27 dBA due to the distance from the project site. Therefore, the estimated noise levels that could be heard from the off-campus residences from the loudest piece of construction equipment on site is less than 58 dBA. After applying an assumed 20 dBA exterior-to-interior noise reduction with all windows closed, the interior average noise levels due to construction would be 38 dBA Leq inside the residences. Additional reduction would occur with the existing terrain. It should be noted that construction equipment noise would not be constant because of the variations of power, cycles, and equipment location.

With respect to construction vehicle noise impacts, heavy trucks exporting demolition spoils would use designated haul routes. As discussed above, it is assumed that construction traffic would use the I-215 freeway, University Avenue, to West Campus Drive, South Campus Drive, and East Campus Drive or the I-215 freeway, Martin Luther King Boulevard to Canyon Crest Drive, West Campus Drive, South Campus Drive, and East Campus Drive to access the project site. There are residences along I-215/SR-60. Therefore, project-generated haul trucks may pass off-campus noise-sensitive receptors along I-215/SR-60. The additional truck noise on off-campus roadway segments would be mixed with existing traffic noise from I-215/SR-60. Individual truck passbys

may be occasionally noticeable; however, because of the large volume of existing traffic on I-215/SR-60, the change in the overall average noise level would not be perceptible, resulting in a less than significant impact. Construction activities for the proposed project would result in a less than significant noise impact to off-campus sensitive receptors with incorporation of PP 4.10-2, PP 4.10-7(a), PP 4.10-7(b), PP 4.10-7(c), and PP 4.10-7(d), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant temporary construction noise impacts to on-campus and off-campus receptors with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As discussed in the IS for the 2005 LRDP Amendment 2 EIR, development under the 2005 LRDP, as amended, was determined to have no impact related to noise from public or private airport/airstrip operations and was not carried forward for further discussion in the Draft EIR. The UCR campus is not located within the boundaries of any airport land use plan; is more than two miles from the nearest public airport; and is not located in the vicinity of a private airstrip. Consistent with the findings of the 2005 LRDP Amendment 2 EIR, implementation of the proposed project would not expose people in the project area to excessive noise levels related to public or private airport operations, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to public use airports or private airstrips. The proposed project impacts were adequately addressed in the LRDP EIR.

**13. POPULATION AND HOUSING**

The analysis of population and housing is tiered from the 2005 LRDP Amendment 2 EIR and was

addressed in Section 4.11, Population and Housing, of that document. Relevant elements of the proposed project related to population and housing include the addition of potentially 20 personnel, including researchers and students on campus. There were no applicable PSs, PPs, or MMs adopted as part of the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR related to population and housing.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.11-1 and 4.11-2 in the 2005 LRDP Amendment 2 EIR determined that, although development under the 2005 LRDP Amendment 2 EIR and cumulative development would directly induce substantial population growth, because the projected housing supply in the area would be adequate to serve the additional population, there would be less than significant impact with implementation of PS Land Use 4 (related to provision of on-campus housing).

As discussed previously in Section II, Project Description, of this document, currently, there are typically eight to 10 research teams (including faculty and students) utilizing the Lathhouse B facility and plant growth houses, with a maximum of 10 personnel working actively within the space at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel on campus. These positions are expected to be filled by the local labor pool, and this increase would be within the growth projections for the campus. The student positions would be filled by students already on campus. It should be noted that the number of researchers and students at the PGEF project at any given time would vary based on work shifts and number of research projects. As discussed in Section V.10, Land Use and Planning, of this IS/MND, this increase in the on-campus population is within the remaining projected growth on campus, as identified in the 2005 LRDP, as amended.

Because the projected housing supply in both the City of Riverside and the region was determined adequate for the additional non-student population associated with implementation of the 2005 LRDP, as amended, it can be concluded that there would be adequate supply for the potential additional staff at the PGEF project. However, it is not likely that all of these positions would be new to the City or region.

Therefore, the proposed project would not result in substantial growth or growth beyond that anticipated with implementation of the 2005 LRDP, as amended. This impact is less than significant, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to inducing substantial population growth in the area either directly or indirectly. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The IS prepared for the 2005 LRDP Amendment 2 EIR concluded that there would be no impacts related to the displacement of existing housing or people since implementation of the 2005 LRDP, as amended, would not involve the demolition or removal of housing. There are no existing residential uses located within the project site as the site is currently developed with Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed. Therefore, the proposed project would not require the construction of replacement housing consistent with the findings of the 2005 LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impacts related to (1) displacement of a substantial amount of existing housing that would necessitate the construction of replacement housing or (2) displacement of substantial numbers of people that would necessitate the construction of replacement housing. The proposed project impacts were adequately addressed in the LRDP EIR.

**14. PUBLIC SERVICES**

The analysis of the provision of public services on campus (i.e., fire, police, schools, and other public facilities) is tiered from the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR and is addressed in Section 4.12, Public Services, of those documents. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to public services include the demolition of the existing Lathhouse B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed; removal of asphalt and concrete pavement throughout the project site; removal of walls, removal of gutter, removal of utilities; and removal of landscape along the northern, southern, and western portion of the project site. Once demolition activities have been completed, the proposed project would involve construction of the PGEF project, hammerhead driveway (that would serve as the fire and emergency access), and associated site improvements.

The following applicable PPs were adopted as part of the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR; they have been incorporated as part of the proposed project and are assumed in the analysis presented in this section.

**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.

**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.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
<p>Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</p>					
<p>a) Fire protection?</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.12-1 and 4.12-3 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR concluded that, with implementation of PP 4.12-1(a), PP 4.12-1(b), and MM 4.12-1, there would be less than significant direct and cumulative impacts related to the need for new or physically altered fire protection facilities to accommodate the increased demand resulting from implementation of the 2005 LRDP, as amended, and to maintain acceptable service levels. As identified in the 2005 LRDP Amendment 2 EIR, the City of Riverside Fire Department (RFD) indicated that it would be desirable to add a fire station near the campus in order to meet national standards for fire and life safety services with the addition of planned development under the 2005 LRDP, as amended. The 2005 LRDP Amendment 2 EIR concluded that the environmental impact resulting from the potential for the RFD to construct new or expanded fire protection facilities would be less than significant.

As discussed in Section II, Project Description, of this IS/MND, implementation of the PGEF would result in the net increase of up to approximately 24,894 gsf of net new building space at the project site. Currently, there are typically eight to 10 research teams (including faculty and students) utilizing the Lathhouse B facility and plant growth houses, with a maximum of 10 personnel working actively within the space at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel on campus. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. As such, potential increase in campus population is considered minimal. Hours of operation would remain the same as existing conditions.

The RFD is responsible for fire suppression, and the UCR Fire, Life, Safety in the Department of Planning, Design & Construction is responsible for inspection, fire protection engineering, and fire prevention. The campus has a Memorandum of Understanding with the State Fire Marshal to provide additional support, and the Campus Fire Marshal is a designated Deputy State Fire Marshal. The proposed project would comply with all regulations of Sections 13000 et seq. of the California Health and Safety Code, which pertain to fire protection systems, including provision

of smoke alarms, fire extinguishers, appropriate building access, and emergency response notification systems. The proposed project incorporates PP 4.12-1(a), which requires new structures to be designed with adequate fire protection features in compliance with State law. It also requires 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. PP 4.12-1(b) requires accident prevention features to be included in new structures to minimize the demand for emergency response services from RFD.

The existing internal access road serves as a fire access lane. Implementation of the proposed project would remove the internal access road and construction a new hammerhead access road on the project site that would continue to serve as a fire and emergency access lane. As such, emergency access would be maintained. As part of the project components, a fire water connection is proposed to feed the hydrants, sprinkler systems for the facility, along with Fire Department Connection assemblies.

The Campus Fire Marshal has determined that the RFD can adequately provide fire protection and emergency medical response services without resulting in the need for additional staff or facilities from other departments. As such, no new, expanded, or altered fire protection services or facilities would be required to serve the proposed project, and no physical environmental impacts related to the provision of fire protection services would result.

Because emergency access and fire flows would be adequate to serve the proposed project and no new, expanded, or altered fire protection services or facilities would be required beyond those included as part of the proposed project, impacts associated with the provision of fire protection services from implementation of the proposed project, which incorporates PP 4.12-1(a) and PP 4.12-1(b), are considered less than significant with incorporation of PP 4.12-1(a); and PP 4.12-1(b) consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact on fire protection services with incorporation of the PPs noted above; no new or altered fire protection services would be required. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Police protection?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.12-2 and 4.12-3 in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR identified that the incremental increase in the campus population may result in increased response times by the UCPD. The increased 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 UCPD may need to purchase additional equipment and hire additional personnel. However, with implementation of PP 4.12-2(a) and PP 4.12-2(b), there would be less than significant direct and cumulative impacts related to the need for new or physically altered police facilities to accommodate the increased demand resulting from implementation of the 2005 LRDP, as amended, and to maintain acceptable service levels.

The anticipated increase in staffing and equipment of the UCPD with the addition of planned development under the 2005 LRDP, as amended, could require provision of additional space, which could include renovation of the existing UCPD facility, expansion of the existing facility, or the acquisition of a satellite facility (similar to the storefront facility at University Village). The potential environmental effects associated with expanding the existing facility or providing a satellite facility were evaluated in the 2005 LRDP Amendment 2 EIR at a program level, and it was concluded that there would be a less than significant impact.

The UCPD is responsible for providing police services to the UCR campus. The UCPD has an MOU with the City of Riverside, whereby the UCPD and the Riverside Police Department provide reciprocal assistance to each other. The two departments jointly operate a community policing enterprise known as the University Neighborhood Enhancement Team (UNET) in a 17.5-square-mile area in the City of Riverside. In addition to UNET, the UCR campus officers handle incidents within the City. In turn, RPD provides the UCPD with emergency backup and, infrequently, assists in handling emergency calls.

As discussed above, the proposed project would increase the campus population by up to 20 personnel. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. As such, potential increase in campus population is considered minimal. The types and volume of service calls for police services at the proposed project would be similar to the Lathhouse B facility on site. Additionally, the proposed PGEF project incorporate crime prevention related design features, including, but not limited to, security cameras, electronic access/controls, and environmental design features to help prevent or deter criminal activity. PP 4.12-2(a), which ensures the hiring of additional officers as needed to maintain adequate service levels, and PP 4.12-2(b), which ensures continued UCR participation in the UNET program, are also incorporated into the proposed project. The UCPD has determined that the proposed project can be adequately served without the need for additional staff or expanded police facilities.

Therefore, consistent with the findings of the LRDP EIR, no new or expanded police facilities would be required and no physical environmental impacts would result with incorporation of PP 4.12-2(a) and PP 4.12-2(b). There would be no impact.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

The proposed project would have no impact related to police services with incorporation of the PPs noted above; no new or altered police facilities would be required. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Schools?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

As identified in the 2005 LRDP EIR and the IS for the 2005 LRDP Amendment 2 EIR, implementation of the proposed 2005 LRDP Amendment 2 would result in new students in the City of Riverside and surrounding areas, and funds would be available from private residential and commercial development to pay for new facilities. In addition, the RUSD and neighboring school districts have a number of options available to accommodate new students. Therefore, it was concluded that implementation of the 2005 LRDP, as amended, would not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities.

The proposed project involves the demolition of the existing facilities on site for the construction of a new PGEF project and associated site improvements. The proposed PGEF project is not a use that would substantially increase the number of students or staff on site. The proposed project would increase the campus population by up to 20 personnel. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. As such, potential increase in campus population is considered minimal and would not result in a direct increase in new students or staff housing resulting in demand for additional schools. The minimal increase in personnel with implementation of the proposed project is consistent with the growth projections assumed in the 2005 LRDP, as amended, and analyzed in the 2005 LRDP EIR and the 2005 LRDP Amendment 2 EIR. As such, the proposed project would not result in an increase in new students within the RUSD service area that was not anticipated in 2005 in the 2005 LRDP EIR or LRDP Amendment 2 EIR. Therefore, consistent with the previous findings, substantial adverse impacts associated with new or physically altered school facilities would not result from implementation of the proposed project, and there would be a less than significant impact, consistent with the findings of the LRDP EIR.

**Additional Project-Level Mitigation Measures**

None required.

**Level of Significance**

The proposed project would have a less than significant impact to schools; no new or altered school facilities would be required. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Parks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of the proposed project’s impacts on parks and other recreation facilities is provided in Section V.15, Recreation, of this IS/MND.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not involve the development of new and expanded recreational facilities, and no new or altered park/recreation facilities would be required as a result of the proposed project. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Other public facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) Create other public service impacts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As identified in the 2005 LRDP EIR and IS for the 2005 LRDP Amendment 2 EIR, implementation of the proposed 2005 LRDP, as amended, would not result in substantial adverse physical impacts associated with the provision of new or physically altered library facilities, and this impact would be less than significant. In addition, UCR provides libraries that are open to the public and are used by its campus population, thus reducing demand on City resources. It was also identified that implementation of planned development under the 2005 LRDP, as amended, would increase the demand on each of the four existing libraries on campus and that satellite libraries may also be developed as part of professional school development. The potential environmental effects associated with the development of satellite libraries were evaluated in the 2005 LRDP EIR at a program level, and it was concluded that there would be a less than significant impact.

As discussed previously, the proposed project would increase the on-campus population by up to 20 personnel. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. As such, potential increase in campus population is considered minimal. The minimal increase in personnel with implementation of the proposed project is consistent with the growth projections assumed in the 2005 LRDP, as amended, and analyzed in the 2005 LRDP EIR and the 2005 LRDP Amendment 2 EIR. As such, the proposed project would not result in an increased demand for on- or off-campus library services or other public services not anticipated in the 2005 LRDP EIR or 2005 LRDP Amendment 2 EIR. Therefore, consistent with the findings of these EIRs, substantial adverse impacts associated with new or physically altered libraries or other public services would not result from implementation of the proposed project.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to library services or other public services.

The proposed project impacts were adequately addressed in the LRDP EIR.

## 15. RECREATION

The analysis of recreation is tiered from the 2005 LRDP EIR and was addressed in Section 4.13, Recreation, of that document. The proposed project does not include the development of any recreational facilities or propose a use that would result in a substantial increase in campus population. There were no applicable PSs, PPs, or MMs adopted as part of the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR related to recreation.

### Project Impact Analysis

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### *Discussion*

The analysis of Impact 4.13-1 in the 2005 LRDP EIR concluded that the 2005 LRDP includes the implementation of recreational facilities that would be sufficient to serve the planned population growth on campus. Further, it was concluded that with implementation of PS Open Space 7, the increased demand for recreational facilities from additional persons in the City of Riverside would not 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. Therefore, the impact was determined to be less than significant.

As discussed previously in Section II, Project Description, of this document, currently, there are typically eight to 10 research teams (including faculty and students) utilizing the Lathhouse B facility and plant growth houses, with a maximum of 10 personnel working actively within the space at any given time. With implementation of the proposed project, it is estimated there would be up to 30 personnel, including researchers and students, actively using the space at any given time. Therefore, there would be a potential increase of 20 personnel on campus. These positions are expected to be filled by the local labor pool, and this increase would be within the growth projections for the campus. As such, there could be a limited increase in the demand for on-campus recreational facilities associated with the increase in population. However, the proposed project would not result in an increased demand for recreational facilities not anticipated in the 2005 LRDP. The addition of needed on-campus recreational facilities is planned in order to meet the increased demand for recreational facilities generated by the planned growth in the campus population and would be expected to decrease the reliance on existing off-campus parks and recreational facilities by UCR students, faculty, and staff.

Therefore, consistent with the findings of the LRDP EIR, the proposed project would result in a less than significant impact related to substantial or accelerated physical deterioration of existing

neighborhood or regional parks or other recreational facilities.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to an increase in 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. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.13-2 in the 2005 LRDP EIR identified that the implementation of the 2005 LRDP would include the development of new recreational facilities that could result in adverse physical impacts on the environment during the construction period. The development of new recreational facilities is one component of the overall LRDP program and, as such, is part of the whole of the action that is analyzed in this 2005 LRDP EIR. The 2005 LRDP EIR concluded that there would be less than significant impacts related to the construction of recreational facilities with implementation of relevant construction-related PSs, PPs, and MMs, including, but not limited to, those related to air quality, noise, traffic, and agriculture.

While there are no recreational facilities included as part of the proposed project, as described in Section II, Project Description, of this IS/MND, the proposed project does include crosswalks at East Campus Drive at Eucalyptus Drive to connect the project site to the existing sidewalks and new ADA compliant pedestrian pathway that would allow pedestrians to travel from the PGEF project to East Campus Drive which in turn would connect pedestrians to the existing recreational facilities on campus.

The proposed project would not require the construction of new recreational facilities or expansion of existing recreational facilities on or off campus. Therefore, no additional physical impacts would occur with implementation of the proposed project consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to the construction or expansion of recreational

facilities. The proposed project impacts were adequately addressed in the LRDP EIR.

## 16. TRANSPORTATION AND TRAFFIC

The analysis of transportation and traffic is tiered from the 2005 LRDP Amendment 2 EIR and was addressed in Section 4.14, Transportation and Traffic, of that document. As described previously in Section II, Project Description, of this IS/MND, relevant elements of the proposed project related to transportation and traffic include (1) a slight increase in traffic associated with vendors and deliveries and the addition of up to 20 personnel with implementation of the proposed project; (2) construction of a new hammerhead driveway; (3) construction of an ADA compliant pathway along the project's frontage; and (4) temporary construction activities that would involve heavy trucks on the identified construction routes (as described in Section II, Project Description, under "Construction Activities").

The following applicable PSs, PPs, and MMs were adopted as part of the 2005 LRDP Amendment and/or 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

**PS Campus and Community 4** Provide strong connections within the campus and its edges to promote walking, bicycling and transit use, rather than vehicular traffic.

**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.

**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.)*

**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.

**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 4.14-6** 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.
- PP 4.14-8** To maintain adequate access for emergency vehicles when construction projects would result in roadway closures, the Office of Architects and Engineers shall consult with the UCPD, EH&S, and the RFD to disclose roadway closures and identify alternative travel routes. *(This is identical to Hazards and Hazardous Materials PP 4.7-7[b].)*
- MM 4.14-1(b)** **Travel Demand Management.** To reduce on- and off-campus vehicle trips and resulting impacts, the University will enhance its Transportation Demand Management (TDM) program. TDM strategies will include measures to increase transit and Shuttle use, encourage alternative transportation modes including bicycle transportation, implement parking policies that reduce demand, and other mechanisms that reduce vehicle trips to and from the campus. The University shall monitor the performance of campus TDM strategies through annual surveys.
- MM 4.14-1(d)** **Sustainability and Monitoring.** The University shall review individual projects proposed under the amended 2005 LRDP for consistency with UC sustainable transportation policy and UCR TDM strategies to ensure that bicycle and pedestrian improvements, alternative fuel infrastructure, transit stops, and other project features that promote alternative transportation are incorporated into each project to the extent feasible.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.14-1 through 4.14-4 in the 2005 LRDP Amendment 2 EIR, which addresses intersection and roadway capacity, concluded that, with implementation of PS Land Use 4, PS Land Use 7, PS Transportation 1 through 6, PP 4.14-1, MM 4.14-1(a), and the Campus

Traffic Mitigation Program (CTMP), composed of MM 4.14-1(b) through MM 4.14-1(f), development under the 2005 LRDP, as amended, would result in the following:

- Less than significant impacts to local roadways under existing plus project conditions and in 2020 and no mitigation is required (Impacts 4.14-3 and 4.14-4);
- Significant and unavoidable impacts to 13 of the 32 study area intersections under the existing plus project condition and 17 intersections under the year 2020 condition; these intersections are under the jurisdiction of the City of Riverside or the Caltrans (Impacts 4.14-1 and 4.14-2).

As discussed in the 2005 LRDP Amendment 2 EIR, all of the intersection improvements described in the CTMP would fall under the jurisdiction of the City and/or the Caltrans. However, because the City and/or Caltrans have not programmed any improvements to these facilities at the time of preparation of the EIR, the construction of the improvements cannot be ensured, as it depends on actions by the City and/or Caltrans. Furthermore, improvements that would restore operations to acceptable levels are not feasible at some of the 17 total affected intersections under the jurisdiction of the City and/or Caltrans. For these reasons, the identified off-campus intersection impacts (Impacts 4.14-1 and 4.14-2) remain significant and unavoidable.

The analysis of Impact 4.14-5 concluded that, even with implementation of PP 4.14-2, development under the 2005 LRDP, as amended, would result in a significant and unavoidable impact to intersection and roadway capacity due to temporary construction traffic.

#### Short-Term Construction Traffic

Construction activities associated with the proposed project could result in temporary closure of on-campus traffic lanes or roadway segments in the project vicinity to permit the delivery of construction materials; to transport exported soil; or to provide adequate site access during construction of utility connections or other project-related features located adjacent to, or within, East Campus Drive. The proposed project anticipates to export approximately 1,210 cubic yards of soil/debris requiring heavy truck trips during grading activities. Notably, as previously discussed under Section V.2, Air Quality, of this IS/MND, approximately 76 truckloads of import over a 7-day period, or approximately 11 truckloads per day during the grading phase is anticipated. Additionally, it is estimated there would be a range of approximately 4 to 28 construction workers/vendors trips per day at the project site during construction activities. It is assumed that construction traffic would use the I-215 freeway, University Avenue, to West Campus Drive, South Campus Drive, and East Campus Drive or the I-215 freeway, Martin Luther King Boulevard to Canyon Crest Drive, West Campus Drive, South Campus Drive, and East Campus Drive to access the project site.

The project contractor would coordinate with UCR staff to ensure that the delivery of construction materials, export of soils, and trips associated with construction workers avoids the peak time when students are attending classes on campus. The proposed project incorporates PP 4.14-2, which requires the campus to assess construction schedules of major projects periodically to determine the potential for overlapping construction activities and adjust construction schedules, work hours, or access routes to the extent feasible to reduce construction-related traffic congestion. Additionally, the proposed project incorporates PP 4.14-5, which requires one travel lane, to minimize construction traffic impacts to the extent feasible. Therefore, potential project-related traffic impacts associated with lane closures and access restrictions during construction would be

less than significant. Although the 2005 LRDP Amendment 2 EIR concluded that construction traffic could be significant at some locations along the identified access routes, for the reasons discussed above, in the event there is an overlap of construction activities on campus, it is concluded that the proposed project would result in a less than significant cumulative traffic construction impact with incorporation of PP 4.14-2 and PP 4.14-5 consistent with the findings of the LRDP EIR.

Long-Term Operational Traffic

Operations associated with the proposed project would generate minor increased operational traffic at the project site primarily associated with vendor and delivery activities and the addition of up to 20 personnel from existing conditions. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. The nominal increase in population is not expected to result in long-term operational traffic. Based on the nominal increase of vendors and deliveries and slight increase in personnel from existing operations, implementation of the proposed project would not result in a significant traffic impact at intersections in the vicinity of the project site.

A discussion of project impacts related to non-vehicular circulation is provided under Threshold V.16(f) below.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact for construction-related with incorporation of the PPs noted above and less than significant impact for operational-related traffic. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.14-6 and 4.14-7 in the 2005 LRDP Amendment 2 EIR, which addressed the Riverside County Congestion Management Program (CMP) under existing plus project conditions and in 2020, determined that the operating conditions of all freeway segments operating unacceptably would continue to do so with the addition of 2005 LRDP-related traffic. In addition, the freeway segment LOS under existing plus project conditions for I-215 northbound, between SR-60 and Central Avenue, and I-215 northbound, between Martin Luther King Jr. Boulevard and University Avenue, would decrease from LOS E to LOS F in the AM peak hour with the addition of project traffic. There are no feasible mitigation measures available for these impacts, and the

EIR concluded there would be a significant and unavoidable impact to the affected freeway segments.

As previously discussed, the proposed project would result in less than significant traffic impacts. University Avenue between Market Street and SR-91 is identified as the closest segment that is part of the County’s Arterial CMP. The proposed project would not generate traffic volumes that would impact this CMP facility. The proposed project would not conflict with the Riverside County CMP. No impact would result, and no mitigation is required.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to conflict with an applicable CMP, including but not limited to, LOS standards and travel demand measures or other standards established by the Riverside County CMP for designated roads or highways. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

Based on the IS prepared for the 2005 LRDP Amendment 2 EIR, implementation of the 2005 LRDP, as amended, would have no impact related to air traffic patterns. The closest airports to the campus are Flabob Airport, located approximately four miles to the west, and March Joint Air Reserve Base, located approximately six miles to the southeast. The IS concluded development under the 2005 LRDP, as amended, would not increase air traffic levels or result in a change in the location of air traffic patterns resulting in substantial safety risks. Therefore, consistent with the findings of the LRDP EIR, there would be no impact from implementation of the proposed project related to air traffic patterns.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to a change in air traffic patterns. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Substantially increase hazards due to a design	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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feature (e.g., sharp curves or dangerous intersections)  
or incompatible uses (e.g., farm equipment)?

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### ***Discussion***

The analysis of Impacts 4.14-8 through 4.14-10 in the 2005 LRDP Amendment 2 EIR, which addresses transportation hazards, concluded that, with implementation of PP 4.14-4, PP 4.14-5, and PP 4.14-6, development under the 2005 LRDP, as amended, would result in less than significant impacts related to (1) vehicular traffic hazards due to design or land use incompatibilities during long-term operation; (2) vehicular traffic hazards during construction due to closure of traffic lands or roadway segments; or (3) pedestrian hazards during construction due to closure of sidewalks or paths.

#### Vehicular Hazards during Construction

As discussed under Threshold V.16(a), construction activities associated with the proposed project could result in temporary closure of traffic lanes or roadway segments to permit the delivery of construction materials; to transport demolition materials; to provide adequate site access; or during construction of other project-related features located adjacent to or within East Campus Drive, the roadway adjacent to the project site. However, disruption to East Campus Drive is expected to be minimal (e.g., for utility line connections) as the majority of construction activity would occur within the project site.

The temporary reduction of roadway capacity, the narrowing of traffic lanes, and the occasional interruption of traffic flow on streets associated with proposed project-related construction activities could pose hazards to vehicular traffic due to localized traffic congestion, decreased turning radii, or the condition of roadway surfaces. To minimize traffic disruption and congestion, the proposed project incorporates PP 4.14-2, which requires coordination of major construction projects on campus, and PP 4.14-5, which requires one travel lane to minimize construction traffic impacts to the extent feasible. With implementation of these PPs, construction-related traffic disruptions would be less than significant.

#### Pedestrian and Bicycle Hazards during Construction

Existing key pedestrian routes in the vicinity of the project site that can also be used by bicyclists, include, but are not limited to, the sidewalk on the west side of East Campus Drive and on Eucalyptus Drive, which are the roadways located west of the project site; and designated bicycle routes along East Campus Drive and Eucalyptus Drive. During construction, these pedestrian and bicyclist movements would be maintained to the extent feasible with potential detours with any lane closures along East Campus Drive during construction activities. PP 4.14-6 is incorporated into the proposed project; therefore, alternate pedestrian routes, which also accommodate bicyclists, would be identified to maintain the same travel movement and signage would be installed to facilitate wayfinding. PP 4.14-5, which requires use of flag persons to ensure traffic control during construction, would also ensure that there is safe movement through the construction access area. Therefore, consistent with the findings of the 2005 LRDP Amendment 2 EIR, there would be less than significant impacts related to pedestrian and bicycle hazards during construction.

#### Vehicular Hazards during Operation

The proposed project does not include permanent modifications to on-campus or City of Riverside

roadways. Access would continue to be from East Campus Drive. A new hammerhead driveway would be constructed onsite and would be reviewed and approved by the Campus Fire Marshal to ensure adequate access and maneuvering capabilities for fire trucks and emergency responders are provided.

Therefore, implementation of the proposed project would not increase hazards due to design features or incompatible uses. Consistent with the findings of the LRDP EIR, operation of the proposed project would result in a less than significant impact related to vehicular hazards.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to a substantial increase in traffic hazards due to a design feature or incompatible uses. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impacts 4.14-11 and 4.14-12 in the 2005 LRDP Amendment 2 EIR, which addressed emergency access, concluded that construction and operation of development under the 2005 LRDP, as amended, would result in less than significant impacts to emergency access with implementation of PS Transportation 4.

Emergency Access during Construction

Vehicular and emergency access to the project site is currently provided from East Campus Drive and includes an internal access road that provides direct access to the existing buildings on site.

Construction activities associated with the proposed project could result in temporary closure of on-campus traffic lanes or roadway segments along East Campus Drive. The reduction of roadway capacity, the narrowing of traffic lanes, and the occasional interruption of traffic flow could temporarily impair emergency access. Construction activities would be planned so that the one lane along East Campus Drive by the project’s frontage would be maintained at all times. Police, medical and rescue operations would be able to use this space. Furthermore, the proposed project incorporates PP 4.14-8 and emergency service agencies would be consulted regarding street closures to ensure adequate access for emergency vehicles during construction. Therefore, consistent with the findings of the 2005 LRDP Amendment 2 EIR, construction of the proposed project would result in less than significant impacts related to vehicular hazards during construction with incorporation of PP 4.14-8, consistent with the findings of the LRDP EIR.

Emergency Access during Operation

Emergency vehicles access the campus via roadways such as the I-215/SR-60 freeways and

University Avenue from each of the cardinal directions. Once emergency vehicles are on campus, the internal roadway network is adequate to allow these vehicles to reach their designated locations, including the project site. With implementation of the proposed project, a new hammerhead driveway would be constructed on the project site that would meet the requirements for fire trucks and emergency responders to maneuver on site.

With the exception of the removal of the existing internal roadway and construction of a new on-site hammerhead driveway off East Campus Drive, the proposed project does not include permanent modifications to on-campus or City of Riverside roadways. Additionally, consistent with the campus' standard procedures, the Campus Fire Marshal would review and approve the proposed project to ensure that circulation and design features allow adequate emergency vehicle access in compliance with the CBC. Adequate vehicle and emergency access to the project site would be maintained with proposed project implementation. Therefore, consistent with the findings of the 2005 LRDP Amendment 2 EIR, there would be less than significant impacts related to emergency access during operation of the proposed project.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to emergency access. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.14-13 in the 2005 LRDP Amendment 2 EIR concluded that development under the 2005 LRDP, as amended, would result in less than significant impacts related to demand for public transit with implementation of PS Transportation 1 and PP 4.14-1.

The proposed project involves the demolition of existing facilities for the construction of a new PGEF project and associated site improvements. Campus public transit, bicycle, or pedestrian facilities would not be substantially impacted as any temporary lane closures along East Campus Drive would include a detour route for these modes of transportation.

The proposed PGEF project is not a use that would substantially increase the number of students or staff on site. The proposed project would result in the increase of up to 20 personnel. These positions are expected to be filled by the local labor pool. The student positions would be filled by students already on campus. The nominal increase in population is not expected to result in direct or indirect population growth in the area that would create an additional demand for alternative transportation facilities not anticipated in the 2005 LRDP Amendment 2 EIR. Additionally, the proposed project incorporates PS Campus and Community 4 (promote campus-wide non-vehicular

transportation), PS Transportation 3 (provide a campus-wide bicycle network to connect to off-campus bicycle routes) by maintaining and enhancing pedestrian and bicycle access through and surrounding the project site, and PS Transportation 5 (provide bicycle parking at convenient locations). Notably, pedestrians and bicyclists arriving to the site would have access off East Campus Drive. Crosswalks are proposed at East Campus Drive to connect the project site to the existing sidewalks at Eucalyptus Drive and the west side of East Campus Drive. An ADA compliant pathway would be constructed along the project’s frontage off East Campus Drive. A landing suitable for public transit pick-up may be constructed along East Campus Drive in front of the proposed ADA pedestrian pathway, as required for safety and ADA compliance. Further, the proposed project incorporates PPs 4.3-1 and 4.14-1 and MM 4.14-1(b) by continuing to implement a TDM program; and MM 4.14-1(d) by providing bicycle racks at the PGEF building and maintaining pedestrian and bicycle access through and surrounding the project site. These PSs, PPs, and MMs serve to reduce vehicular trips and encourage public transit among other types of alternative transportation (i.e., walking, biking). Thus, consistent with the findings of the LRDP EIR, the proposed project would not conflict with adopted policies, plans, or programs that support alternative transportation and would result in a less than significant impact with incorporation of PS Campus and Community 4, PS Transportation 3, PS Transportation 5, PP 4.14-1, MM 4.14-1(b), and MM 4.14-1(d).

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to conflicts with applicable policies, plans, or programs supporting alternative transportation. The proposed project impacts were adequately addressed in the LRDP EIR.

**17. TRIBAL CULTURAL RESOURCES**

There are no relevant elements of the proposed project related to tribal cultural resources and no PSs, PPs, or MMs are applicable. In January 2017, updates to the *CEQA Guidelines* were adopted, which included the addition of a Tribal Cultural Resources section, as addressed in this section.

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					

- |  |                          |                          |                                     |                                     |                          |
|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k), or   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California American tribe. | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> |

***Discussion***

Historic Resources

As previously addressed in Threshold V.5(a) in the Cultural Resources, of this IS/MND, on April 26, 2018, a historical resource literature and records search for the proposed project was completed at the EIC of the CHRIS, housed at UCR. The results of the records search indicate that no previous historic resource surveys have been conducted within close proximity of the project area. One cultural resource, the Citrus Experiment Station, was identified near the project site. This resource was designated a California Historic Point of Interest in 1969. None of the subject buildings within the project area have been previously recorded in the CHRIS.

On April 26, 2018, an intensive-level pedestrian survey and historic building assessment of the Lathhouse B, four plant growth glasses houses, and the Arabidopsis plant growth house was conducted. Additionally, the Historic Building Assessment consultant coordinated with the UC Department of Architects & Engineers; reviewed historical USGS maps and aerial photographs; photographs, glass slides, and building plans at the UCR University Archives and Special Collections; and UCR online sources including the Citrus Variety Collection, Botany and Plant Sciences Department History, and Plant Growth Facilities. No buildings, structures, or features of interest were visible within the project site prior to 1965.

Based on the Historic Building Assessment (Appendix C) for the proposed project and summarized above, the proposed project would result in less than significant impacts related to historical resources.

Tribal Cultural Resources and Coordination

In September 2014, Governor Brown signed Assembly Bill 52 (AB 52) (Chapter 532, Statutes of 2014), which created a new category of environmental resources that must be considered under CEQA: “tribal cultural resources”. The legislation imposes new requirements for offering to consult with California Native American tribes regarding projects that may affect a tribal cultural resource; emphasizes a broad definition of what may be considered to be a tribal cultural resource; and includes a list of recommended MMs.

Recognizing that tribes may have expertise regarding their tribal history and practices, AB 52, which became effective on July 1, 2015, requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project, if they have requested such notice in writing. The project notification is required prior to the lead agency’s

release of a Notice of Preparation of an EIR or notice of intent to adopt an MND or ND. Once Native American tribes receive a project notification, they have 30 days to respond as to whether they wish to initiate consultation regarding the project, including subjects such as mitigation for any potential project impacts. If a tribe requests consultation and the lead agency and the tribe ultimately agree on mitigation to address any potentially significant impacts to tribal cultural resources, the MMs agreed upon during consultation must be recommended for inclusion in the environmental document.

To date, UCR has received two requests for project notification pursuant to AB 52 (from the Agua Caliente Band of Cahuilla Indians and the Torres Martinez Desert Cahuilla Indians). On January 23, 2018, UCR provided these tribes with notification of the proposed PGEF project. On February 12, 2018, the Agua Caliente Band of Cahuilla Indians responded to this request stating that the project area is not located within the boundaries of the tribe's reservation but within the tribe's Traditional Use Area and as such deferred to the Soboba Band of Luiseño Indians. However, the Soboba Band of Luiseño Indians did not request to be part of the project notification as part of AB 52 and no notice was sent to the tribe. No response was received from the Torres Martinez Desert Cahuilla Indians.

A Sacred Lands File Check was performed in 2003 by the Native American Heritage Commission (NAHC) for the 2005 LRDP EIR and did not indicate the presence of sites of Native American cultural or religious value on the campus. A Sacred Lands File search request was emailed to the NAHC on November 29, 2017. The NAHC responded on January 17, 2018 indicating that the search for the Sacred Lands File search was completed with negative results; however, the NAHC identified that the area is sensitive for potential tribal cultural resources.

The proposed project is an infill development on a currently developed/disturbed site. A Cultural Resource Constraints Analysis (Appendix D) was prepared for the proposed project. Given the developed nature of the site and surrounding areas to the north, south, and west, it was determined that the potential to find intact buried deposits within the project area is low (Appendix D). The area east of the project, east of the proposed hammerhead driveway, contains no buildings or structures and appears to be intact. The project footprint would not expand to the east of the proposed hammerhead driveway where it is currently open space. The proposed project would avoid the open space area immediately east of the project site noted as No Impact Zone on **Figure 5**. UCR's standard contractor specifications address protection and recovery of buried artifacts, including archaeological resources, and the standard requirements are incorporated into the project as MM Cul-1. This mitigation measure identifies steps to be taken in the event archaeological resources, including Native American cultural resources, are discovered during construction.

#### ***Additional Project-Level Mitigation Measures***

Refer to MM Cul-1 in Section V.5, Cultural Resources.

#### ***Level of Significance***

The proposed project would have a (1) less than significant impact related to historical resources and (2) less than significant impact related to tribal cultural resources with implementation of MM CUL-1.

## **18. UTILITIES AND SERVICE SYSTEMS**

The analysis of utilities and service systems (e.g., water supply, solid waste, wastewater, and

energy) is tiered from the 2005 LRDP Amendment 2 EIR and was addressed in Section 4.15, Utilities, of that document. As described previously in Section II, Project Description of this IS/MND, relevant elements of the proposed project related to utilities and service systems including demolition, construction of an approximately 38,000 gsf PGEF, installation of landscape, and associated site improvements. Implementation of the proposed project would increase the demand for water and energy and the generation of solid waste and wastewater within the project site. The proposed project would be designed to achieve, at a minimum, a LEED Silver rating.

The following applicable PPs were adopted as part of the 2005 LRDP Amendment 2 EIR and are incorporated as part of the proposed project and assumed in the analysis presented in this section.

**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 4.15-5** 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).

**Project Impact Analysis**

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As identified in the analysis of Impact 4.15-3 of the 2005 LRDP Amendment 2 EIR, the UCR Campus does not treat or discharge wastewater to any surface waters. Wastewater generated at the campus is collected and discharged into the City’s sewer system from where it is conveyed to the City of Riverside Regional Water Quality Control Plant (RWQCP) for treatment and disposal. Therefore, the campus is not considered a point-source of water pollution for regulatory purposes and is not subject currently to any Waste Discharge Requirements established by the Santa Ana Regional Water Quality Control Board (RWQCB). Therefore, the proposed project would not exceed wastewater treatment requirements. No impact would occur, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have no impact related to exceeding wastewater treatment requirements of the Santa Ana RWQCB. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.15-2 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to construction of new or expanded water treatment facilities with implementation of PP 4.15-1(a) and PP 4.15-1(d). The analysis of Impact 4.15-4 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to the construction of new or expanded wastewater conveyance systems with implementation of MM 4.15-4. In addition, the EIR identified that campus development under the amended 2005 LRDP would also be required to follow water conservation policies listed in the UC Sustainability Policy and adhere to goals listed in the water section of the Sustainability Action Plan (SAP).

## Water

As identified in Table 4.15-4, Existing and Projected UCR Campus Water Demand, from the 2005 LRDP Amendment 2 EIR, the total water consumption on campus in 2009-2010 was 2.5 million gallons per day (mgd); the entire demand was generated on the East Campus. The projected campus-wide water demand in 2020 is estimated in the 2005 LRDP Amendment 2 EIR at 5.3 mgd, including 3.0 mgd on the East Campus. This represents an estimated increase in water demand associated with the East Campus of 0.5 mgd.

Implementation of the proposed project would result in a potential slight increase in the average daily on-campus population by up to 20 individuals, and would involve a net increase of up to approximately 24,894 gsf of net new building space at the project site. The proposed project would incorporate PP 4.15-1(b) (implementation of water consumption reduction measures) and PP 4.15-1(c) (ensures that leaks in water and irrigation pipes are repaired), as necessary. An average annual water usage was provided by the applicant; implementation of the PGEF is estimated to use approximately 7,064,423 gallons of water per year (approximately 19,355 gallons per day). The proposed water usage is well below the projected additional water demand associated with development on the East Campus of 3.0 mgd assumed in the 2005 LRDP, as amended. Therefore, the proposed project's water consumption would be well within the increase anticipated in the 2005 LRDP Amendment 2 EIR.

The domestic water system at UCR consists of an underground distribution system, a pumping system, storage tanks, and connections to the City of Riverside's municipal water distribution system. The 2005 LRDP Amendment 2 EIR concluded that because the City would be able to provide the necessary water using existing or planned water facilities, implementation of the 2005 LRDP, as amended, would not require the construction of new or expanded water facilities. As required by PP 4.15-1(a), the campus has reviewed the adequacy of the domestic/fire water systems that would serve the proposed project. As identified in Section II, Project Description, domestic water and fire supply would be supplied from the existing 8-inch water main, which currently runs north-south along East Campus Drive. All existing water connections to the site would be abandoned. A separate hot tap connection and manifold is proposed that would include one service connection for domestic water and one service connection for fire sprinkler water. The connection to serve landscape irrigation would be tapped off the domestic water service line. A fire water connection is proposed to feed the hydrants, sprinkler systems for the facility, along with Fire Department Connection assemblies. Existing flow rates are sufficient with existing main sizes and distribution pumps to allow for connection of the proposed project to the campus water lines. No new or expanded water liens would be necessary beyond those within the project limits to connect the PGEF building to existing lines. The impact area for installation of these water lines is within the construction impact limits of the project site, and the physical impacts have been addressed in the analysis throughout the IS. Therefore, consistent with the findings of the LRDP EIR, this impact would be less than significant.

## Wastewater Infrastructure

Wastewater on campus is collected in the sanitary sewer system on campus, which consists of a network of lines owned and maintained by UCR. An existing 6-inch sanitary sewer line runs within East Campus Drive. The project proponent would install a new PVC sanitary sewer line that would connect to the manhole located at the intersection of Eucalyptus Drive and East Campus Drive. Existing sewer connections would be abandoned and/or removed.

Implementation of the proposed project would result in a potential slight increase in the average daily on-campus population by up to 20 individuals. The proposed project's increase in on-campus population was assumed in the 2005 LRDP, as amended. Therefore, the proposed project's wastewater generation would be within the increase anticipated with buildout of the 2005 LRDP, as amended, and there is sufficient remaining capacity in the sewer lines serving the East Campus. A shower and restrooms are proposed as part of the project which would produce additional wastewater on the project site. Given the nature of the proposed project and the limited amount of personnel (up to 30 personnel) on the project site, no new or expanded sewer laterals or main lines would be necessary with proposed project implementation beyond the sewer lines that is proposed to connect the PGEF building to the existing sewer main. The impact area for the installation of these sewer lines is within the construction impact limits of the project site, and the physical impacts have been addressed in the analysis throughout the IS. Therefore, consistent with the findings of the LRDP EIR, this impact would be less than significant.

Consistent with the findings of the LRDP EIR, there would be less than significant impacts related to wastewater infrastructure of wastewater treatment facility capacity. In addition, because wastewater generation is correlated to water usage, continued water conservation practices would reduce the volume of wastewater generated. Continued implementation of PP 4.15-1(b) and PP 4.15-1(c), which emphasizes a variety of water conservation practices, would further reduce wastewater generation and utilization of sewer line capacity.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not require construction of new water or wastewater treatment facilities beyond the installation of new lines to connect to the proposed project. The physical limits of utility construction are within the impact area addressed throughout this IS. The proposed project would have a less than significant impact related to the capacity of existing water and wastewater systems. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) 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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

Please refer to the analysis of drainage provided under Section V.9, Hydrology and Water Quality, of this IS/MND. In summary, the analysis concluded that operation of the proposed project would not exceed the capacity of the existing storm drain system, and there would be less than significant impact, consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

**Level of Significance**

There is a less than significant impact related to the need for new or expanded storm drainage facilities beyond the installation of new storm waste management facilities to serve the proposed project. The physical limits of construction are within the impact area addressed throughout this IS. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Discussion**

The analysis of Impact 4.15-1 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to water supply with implementation of PP 4.15-1(a) through PP 4.15-1(d). In addition, the EIR identified that campus development under the amended 2005 LRDP would also be required to follow water conservation policies listed in the UC Sustainability Policy; adhere to goals listed in the water section of the SAP; and comply with any future conservation goals or programs enacted by the UC.

As described in the 2005 LRDP Amendment 2 EIR, the RPU Department supplies domestic water to UCR. RPU’s water supply consists primarily of groundwater, with additional sources, including recycled water and imported water. UCR also has rights to potable water in the Gage Canal. All existing and planned water supply entitlements, water rights, and/or water service contracts that may be used to serve development associated with the 2005 LRDP, as amended, are set forth in the current City of Riverside Urban Water Management Plan (UWMP), prepared by RPU by Water Systems Consulting, Inc. in 2015 (2015 UWMP). The 2015 UWMP identifies adequate potable water supplies to meet future demands (through 2040) within the RPU’s water supply service area, which includes the UCR campus, under normal weather conditions. Specifically, the 2015 UWMP projects surplus water supplies under all scenarios, including multiple dry years (WSC 2016).

The 2005 LRDP Amendment 2 EIR concluded there would be adequate water supplies for implementation of the 2005 LRDP, as amended, with implementation of PP 4.15-1(a) through PP 4.15-1(d). The proposed project (with a net increase of up to approximately 24,894 gsf of building space) is within the assumed remaining development for the East Campus under the 2005 LRDP, as amended, and future development on campus is assumed in the City of Riverside UWMP. Additionally, the estimated water usage of approximately 7,064,423 gallons of water per year (approximately 19,355 gallons per day) is well below the projected additional water demand associated with development on the East Campus of 3.0 mgd assumed in the 2005 LRDP, as amended. Continued implementation of PP 4.15-1(a), PP 4.15-1(b), and PP 4.15-1(c) ensures adequate water supplies are available to serve the proposed project. As such, consistent with the findings of the 2005 LRDP Amendment 2 EIR, there would be a less than significant impact related to water supply with incorporation of PP 4.15-1(a), PP 4.15-1(b), and PP 4.15-1(c), consistent with the findings of the LRDP EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

There are adequate water supplies to serve the proposed project, resulting in a less than significant impact with incorporation of the PPs noted above. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.15-3 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to construction of new or expanded water treatment facilities with implementation of PP 4.15-5 and MM 4.15-3. As identified in the 2005 LRDP Amendment 2 EIR, the Sewerage Systems Services Program and its Treatment Services unit, administered by the RPU, collects, treats, and disposes of all wastewater generated within the City of Riverside and is responsible for compliance with State and federal requirements governing the treatment and discharge of all domestic and industrial wastewater generated in its service area, including the UCR campus. The City of Riverside RWQCP provides treatment of all campus-generated wastewater, with UCR operating its own collection system that connects to the City's system. The City of Riverside RWQCP currently treats an average of 30 mgd and has a capacity of 40 mgd. The plant is currently being expanded and retrofitted, and would have a capacity of 46 mgd. The City's Integrated Wastewater Master Plan addresses facility needs for projected wastewater influent flow through the year 2025 and identifies improvements that would increase the capacity of the City of Riverside RWQCP up to 52.2 mgd, although at this time, the City is increasing the treatment capacity of the RWQCP to 46 mgd.

The 2005 LRDP Amendment 2 EIR also determined that implementation of the 2005 LRDP, as amended, would not generate a volume of wastewater that would exceed the capacity of the City of Riverside RWQCP wastewater treatment system in combination with the provider's existing service commitments. Because the proposed project would only result in a net increase of up to approximately 24,894 gsf of net new building space on campus, and is within the remaining development allocation assumed for the campus in the 2005 LRDP Amendment 2 EIR, the wastewater generated would also be accommodated by the City of Riverside RWQCP. Additionally, as required by PP 4.15-5, the proposed project would comply with all applicable water quality requirements established by the Santa Ana RWQCB. Consistent with the findings of the LRDP EIR this impact would be less than significant.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would not generate wastewater that exceeds the capacity of the wastewater treatment facilities resulting in a less than significant impact. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
f) Be served by a landfill with sufficient permitted capacity to accommodate the project’s solid waste disposal needs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g) Comply with applicable federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.15-6 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to landfill capacity. The analysis of Impact 4.15-7 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to compliance with applicable Federal, State, and local solid waste-related statutes and regulations. It should also be noted that further reduction in solid waste generation would occur with implementation of the UC Policy of Sustainable Practices.

The City of Riverside Solid Waste Division is responsible for the collection and handling of residential refuse, recycling, and green waste (compostable organic waste) generated within the City of Riverside. The Robert A. Nelson Transfer Station, located at 1830 Agua Mansa Road, receives refuse from western Riverside County, including the UCR campus. The transfer station is owned by the Riverside County Department of Waste Resources (RCDWR) and operated by Burrtec Waste Industries. The transfer station is permitted to accept up to 4,000 tons of solid waste per day and is currently processing approximately 1,800 tons of solid waste per day (Burrtec 2019). The operations division of the RCDWR receives, compacts, and buries refuse received at the various landfill sites at several locations in the County (UCR 2011).

On the UCR campus, trash is collected and placed in containers located throughout the campus. The RCDWR is responsible for the landfilling of non-hazardous county waste. In this effort RCDWR operates six landfills, has a contract agreement for waste disposal with an additional private landfill, and administers several transfer station leases (RCDWR 2018). These facilities are regulated at the Federal, State, and local levels and monitored for compliance.

The 2005 LRDP Amendment 2 EIR assumed an annual generation factor of 0.675 ton of solid waste per 1,000 square feet of building space on campus. This factor was developed by comparing the existing occupied building space to existing generation of solid waste at the time of preparation of the EIR. Based on the identified solid waste generation factor, the net increase of up to approximately 24,894 gsf of net new building space on campus with the PGEF building would generate approximately 16.81 tons per year of solid waste, which is approximately 0.5 percent of

the total projected solid waste generation for the development remaining on campus under the 2005 LRDP, as amended, not including the SOM (3,544 tons per year).

However, consistent with the UC Sustainability Practices Policy, the UCR campus is currently committed to diverting at least 75 percent of its solid waste from landfills, and diverting 100 percent by 2020. UCR currently diverts approximately 95 percent of its general solid waste stream. To accomplish this, UCR implements a waste/source reduction and recycling program that includes sorting and separating wastes to simplify the removal of recyclable materials and the expansion of composting procedures associated with landscaping and agriculture to reduce the solid waste flow. The campus has constructed a transfer station on the West Campus north of Lot 30. UCR collects the recyclables and waste on campus and delivers these materials to the transfer station for hauling. Athens Services picks up the recyclable material for recycling. UCR delivers waste, in UCR haul trucks, to the Nelson Transfer Station from which Burrtec then transports 100 percent of the non-recyclable material to a waste-to-energy facility. The campus composts all green wastes on campus. In addition, the campus is carrying out a shift in its procurement practices toward recyclable, second generation, or reusable products to the extent feasible. It is also important to note that operations at the project site would follow zero waste practices and sort the waste into three separate streams: compost, recyclables and landfill waste. A three-bin system would be used for trash receptacles. Given that currently approximately 95 percent of solid waste stream is diverted, recycled, or reused, it is estimated that the proposed project would generate approximately 0.84 tons per year of solid waste after implementation of solid waste diversion efforts.

As discussed in the 2005 LRDP Amendment 2 EIR, it is anticipated that solid waste from UCR would continue to be disposed at the Badlands Landfill, in the City of Moreno Valley, which had an estimated capacity of approximately 6.5 million tons as of October 2016. Based on the current permit, the landfill has a remaining capacity of 6.9 million tons as of July 2018 with an anticipated closure in 2025. The Badlands Landfill receives a maximum of 4,500 tons per day (tpd) with an average daily load of 3,000 tpd (Andy Cortez, personal communication, December 6, 2018). The approximately 0.84 tons of solid waste per year (approximately 0.2 tpd) from the proposed project would represent a negligible amount of the landfill's permitted daily capacity of 4,500 tpd. Therefore, the anticipated solid waste generation from the proposed project can be accommodated within the remaining permitted capacity of the Badlands Landfill, and there would be a less than significant impact related to solid waste disposal, consistent with the findings of the 2005 LRDP Amendment 2 EIR.

Therefore, consistent with the findings of the LRDP EIR, there would be a less than significant impact related to solid waste statutes and regulations.

#### ***Additional Project-Level Mitigation Measures***

None required.

#### ***Level of Significance***

The proposed project would have a less than significant impact related to (1) landfill capacity and solid waste disposal and (2) compliance with applicable Federal, State, and local statutes and regulations related to solid waste. The proposed project impacts were adequately addressed in the LRDP EIR.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
h) Create other utility and service system impacts?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The analysis of Impact 4.15-8 through 4.15-10 in the 2005 LRDP Amendment 2 EIR concluded there would be a less than significant impact related to the need to construct new or expanded energy (electricity and natural gas) production of transmission facilities or to the inefficient use of energy.

Electricity

As identified in the 2005 LRDP Amendment 2 EIR, the RPU provides electricity to the UCR campus. The energy is received through a 69 kilovolt (kV) line at a substation west of the I-215/SR-60 freeway. From this point, the power is reduced to a usable voltage and distributed to individual buildings and transformers. Electrical service for the proposed project would be supplied from the campus’ normal power distribution system (12 kV).

The 2005 LRDP Amendment 2 EIR concluded that the peak power demands on campus are 25.5 MVA (megavolt amps), and the total campus development under the 2005 LRDP, as amended, would demand 49 MVA, which is an increase of 23.5 MVA over existing conditions at the time. The total capacity of the existing 12 kV substation is 54 MVA, so the 2005 LRDP Amendment 2 EIR concluded that the existing campus electrical distribution system would be able to accommodate the anticipated demand of development under the 2005 LRDP, as amended, of which the proposed project is a part. Additionally, it was concluded that the RPU would have adequate infrastructure to serve the remaining and new development on campus.

It should also be noted that campus development under the 2005 LRDP, as amended, would be required to follow energy conservation policies listed in the UC Sustainability Practices Policy, minimize energy use in order for the campus to attain the GHG reduction goals listed in the campus CAP and comply with any future conservation goals or programs enacted by the UC. Therefore, the electric demand of the proposed project has been calculated taking these requirements into consideration.

As described in Section II, Project Description, two existing circuits would be intercepted in Vault 11, located west of the building in East Campus Drive, and extended to a new exterior 12 kV sectionalizing switch and then to a new oil filled 750 kVA transformer pad mounted transformer. The installation of electric lines would be within the construction impact footprint for the proposed project. Therefore, the potential environmental impacts from construction of the new and replacement electrical facilities are addressed as part of the proposed project analysis provided throughout this IS.

Therefore, consistent with the findings of the 2005 LRDP Amendment 2 EIR, there would be a less than significant impact related to construction of new or expanded electrical infrastructure or the inefficient use of energy.

## Natural Gas

As identified in the 2005 LRDP Amendment 2 EIR, UCR uses natural gas for heating and some cooling needs for research and instructional lab purposes. Natural gas is provided to the East Campus by SoCalGas. The 2005 LRDP Amendment 2 EIR concluded that the total campus development under the 2005 LRDP, as amended, would demand 45,458 therms per day, which is an increase of 31,700 therms per day over existing conditions at the time. SoCalGas has indicated that it could provide gas service to the campus to accommodate future development under the 2005 LRDP, as amended.

A high-pressure gas distribution system owned and maintained by SoCalGas provides natural gas to the Central Utility Plant, as well as many individual buildings on campus. Separate SoCalGas gas mains also enter the campus to serve the residence halls in addition to the Canyon Crest Family Student Housing area. Natural gas would be piped to boilers, water heaters, and lab outlets to meet the project needs. The proposed project is estimated to generate a total natural gas demand of approximately 3.6 therms per day. This increase would be less than 0.0001 percent of the increased natural gas demand anticipated with the remaining development under the 2005 LRDP, as amended. It should also be noted that campus development under the 2005 LRDP, as amended, would be required to follow energy conservation policies listed in the UC Sustainability Practices Policy; minimize energy use in order for the campus to attain the GHG reduction goals listed in the campus CAP; and comply with any future conservation goals or programs enacted by the UC.

Therefore, the natural demand of the proposed project has been calculated taking these requirements into consideration. Natural gas would be supplied to the proposed project via a connection to an existing line along East Campus Drive. The installation of natural gas lines within the project site and connections to the existing line would be within the construction impact footprint for the proposed project. Therefore, the potential environmental impacts from construction of the new and/or relocated natural gas facilities are addressed as part of the proposed project analysis provided throughout this IS.

Therefore, consistent with the findings of the LRDP EIR, there would be a less than significant impact related to construction of new or expanded natural gas infrastructure or the inefficient use of natural gas or energy.

### ***Additional Project-Level Mitigation Measures***

None required.

### ***Level of Significance***

The proposed project would have a less than significant impact related to provision of electricity and natural gas to the project site or the inefficient use of energy. The proposed project impacts were adequately addressed in the LRDP EIR.

### **Mandatory Findings of Significance**

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<b>Threshold(s)</b>	<b>Potential Significant Impact</b>	<b>Project Impact Adequately Addressed in LRDP EIR</b>	<b>Less Than Significant With Project-Level Mitigation Incorporated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
<hr/> The lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is					

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substantial evidence, in light of the whole record, that any of the following conditions may occur. Where prior to commencement of the environmental analysis a project proponent agrees to mitigation measures or project modifications that would avoid any significant effect on the environment or would mitigate the significant environmental effect, a lead agency need not prepare an EIR solely because without mitigation the environmental effects would have been significant (per Section 15065 of the State CEQA Guidelines):

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a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

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### ***Discussion***

As discussed in Section V.4, Biological Resources, of this IS/MND, the proposed project would have less than significant impacts related to special-status plant and wildlife species or sensitive habitats and wildlife corridors. The closest drainage feature is an unnamed drainage flow line located approximately 54 feet east of the project site. The unnamed drainage flow line drains approximately 170 feet northeast of the project site into a Detention Basin (see **Figure 9**). The proposed project would be constructed within developed/disturbed areas or within ornamental/exotic landscaped areas and not within the unnamed drainage, the drainage flow line, or Detention Basin. Thus, the proposed project would avoid the open space area east of the project site as noted as No Impact Zone on **Figure 5**. Nonetheless, the proposed project incorporates PP 4.4-2(b) (compliance with NPDES and BMP requirements) to ensure on-site runoff does not flow to the adjacent open space areas east of the project site. The proposed project incorporates PS Open Space 3 (preserve natural resources, including trees, where feasible, in Naturalistic Open Space areas), MM 4.4-4(a) (surveys for nesting bird and raptor species prior to construction, and MM 4.4-4(b) (protection of active nests during construction) from the 2005 LRDP Amendment 2 EIR, and as a result, would have a less than significant impact on nesting species. The proposed project also includes tree retention and replacement to ensure a less than significant impact related to removal of trees. Therefore, the potential for the proposed project to degrade the quality of the environment related to biological resources would result in a less than significant impact.

As discussed under Section V.5, Cultural Resources, of this IS/MND, a Historic Building Assessment was prepared which concluded that there are no historic resources within or adjacent to the project area because it did not meet the criterion for inclusion in the CRHR.

The proposed project would incorporate PP 4.5-4 (instructions for addressing uncovered paleontological resources in the construction specifications) and PP 4.5-5 (instruction for discovery of human remains) from the 2005 LRDP EIR and project-specific MM CUI-1 (instructions for addressing uncovered archaeological resources in the construction specifications). As such, there would be a less than significant impact related to the potential to eliminate important examples of the major periods of California history or prehistory with implementation of the 2005 LRDP PPs and project-specific MMs.

***Additional Project-Level Mitigation Measures***

None required for biological resources.

MM Cul-1 noted in Threshold V.5(b) would ensure that potential impacts related to inadvertent discovery of uncovered archaeological resources during construction activities would remain less than significant.

***Level of Significance***

The proposed project would have a less than significant impact related to the potential to degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; and substantially reduce the number or restrict the range of a rare or Endangered plant or animal.

The proposed project would have a less than significant impact with mitigation incorporated related to eliminating important examples of the major periods of California history or prehistory.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
b) Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of past, present and probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

The minimal increase in personnel with implementation of the proposed project is consistent with the growth projections assumed in the 2005 LRDP, as amended, and analyzed in the 2005 LRDP EIR and the 2005 LRDP Amendment 2 EIR. Additionally, the proposed project’s development of a net increase of up to approximately 24,894 gsf of building space is within the assumed remaining development for the East Campus under the 2005 LRDP, as amended.

As identified through the analysis presented in this IS/MND, the proposed project would not result in significant environmental impacts during construction or operation with continued implementation of applicable PSs, PPs, and MMs (identified for each environmental topic analyzed above in Sections V.1 through V.18 of this IS/MND). Potential cumulative construction impacts related to air quality and traffic have been addressed in Section V.3 and V.16 of this IS/MND, respectively, and are determined to be less than significant.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have less than significant cumulatively considerable impacts.

Threshold(s)	Potential Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant With Project-Level Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

***Discussion***

As indicated in the analysis presented in this IS/MND, the proposed project would not result in potentially significant impacts that could degrade the quality of the environment or cause substantial adverse effects on human beings, either directly or indirectly.

The proposed project would not result in new or more significant impacts than addressed and disclosed in the 2005 LRDP EIR and 2005 LRDP Amendment 2 EIR with continued implementation of the applicable PPs, PSs, and MMs (identified for each environmental topic analyzed above in Sections V.1 through V.18 of this IS/MND) from the MMRP adopted as part of the 2005 LRDP EIR and the 2005 LRDP Amendment 2 EIR.

***Additional Project-Level Mitigation Measures***

None required.

***Level of Significance***

The proposed project would have a less than significant impact related to the potential to have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.

## **VI. SUPPORTING INFORMATION SOURCES**

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**VII. INITIAL STUDY PREPARERS**

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# **Appendix A**

## **CalEEMod Calculation Models**

# CalEEMod – Annual

UCR PGE-1 - Riverside-South Coast County, Annual

**UCR PGE-1**  
**Riverside-South Coast County, Annual**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	38.00	1000sqft	0.87	38,000.00	0
Other Non-Asphalt Surfaces	0.38	Acre	0.38	16,552.80	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2020
<b>Utility Company</b>	Riverside Public Utilities				
<b>CO2 Intensity (lb/MWhr)</b>	1325.65	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

UCR PGE-1 - Riverside-South Coast County, Annual

Project Characteristics -

Land Use - Per site plan

Construction Phase - per applicant

Demolition -

Grading - 1,210 cy export

Off-road Equipment - per applicant

Off-road Equipment - per applicant

Off-road Equipment - per applicant

Off-road Equipment - per applicant; assume 8 hrs/day

Off-road Equipment - per applicant, airless sprayer used

Trips and VMT - water truck trips added

Vehicle Trips - increase of 20 new personnel

Water And Wastewater - water demand per applicant

Construction Off-road Equipment Mitigation - water site 3x daily per Rule 403

Waste Mitigation - per Calrecycle

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	8.00
tblConstructionPhase	NumDays	200.00	271.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	7.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	3/24/2020	5/13/2020
tblConstructionPhase	PhaseEndDate	2/25/2020	6/5/2020
tblConstructionPhase	PhaseEndDate	5/15/2019	5/1/2019
tblConstructionPhase	PhaseEndDate	5/21/2019	5/10/2019
tblConstructionPhase	PhaseEndDate	3/10/2020	5/8/2020

UCR PGE-1 - Riverside-South Coast County, Annual

tblConstructionPhase	PhaseStartDate	3/11/2020	5/4/2020
tblConstructionPhase	PhaseStartDate	5/22/2019	5/24/2019
tblConstructionPhase	PhaseStartDate	5/16/2019	5/2/2019
tblConstructionPhase	PhaseStartDate	2/26/2020	5/4/2020
tblGrading	AcresOfGrading	0.00	1.50
tblGrading	MaterialExported	0.00	1,210.00
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

## UCR PGE-1 - Riverside-South Coast County, Annual

tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblVehicleTrips	CC_TTP	48.00	50.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	50.00
tblVehicleTrips	ST_TR	2.46	1.05
tblVehicleTrips	WD_TR	11.03	1.05
tblWater	IndoorWaterUseRate	6,753,882.42	7,064,423.00
tblWater	OutdoorWaterUseRate	4,139,476.32	0.00

## 2.0 Emissions Summary

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UCR PGE-1 - Riverside-South Coast County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	4-18-2019	7-17-2019	0.5149	0.5149
2	7-18-2019	10-17-2019	0.5274	0.5274
3	10-18-2019	1-17-2020	0.5177	0.5177
4	1-18-2020	4-17-2020	0.4699	0.4699
5	4-18-2020	7-17-2020	0.4286	0.4286
		Highest	0.5274	0.5274

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1563	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0200e-003
Energy	7.1000e-004	6.4600e-003	5.4300e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	224.5646	224.5646	4.8900e-003	1.1100e-003	225.0187
Mobile	0.0140	0.1215	0.1835	7.6000e-004	0.0567	7.2000e-004	0.0574	0.0152	6.8000e-004	0.0159	0.0000	70.2911	70.2911	3.5600e-003	0.0000	70.3801
Waste						0.0000	0.0000		0.0000	0.0000	7.1737	0.0000	7.1737	0.4240	0.0000	17.7725
Water						0.0000	0.0000		0.0000	0.0000	2.2412	55.3115	57.5527	0.2314	5.6900e-003	65.0322
<b>Total</b>	<b>0.1710</b>	<b>0.1280</b>	<b>0.1894</b>	<b>8.0000e-004</b>	<b>0.0567</b>	<b>1.2100e-003</b>	<b>0.0579</b>	<b>0.0152</b>	<b>1.1700e-003</b>	<b>0.0164</b>	<b>9.4149</b>	<b>350.1682</b>	<b>359.5831</b>	<b>0.6638</b>	<b>6.8000e-003</b>	<b>378.2046</b>

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**2.2 Overall Operational**

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1563	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0200e-003
Energy	7.1000e-004	6.4600e-003	5.4300e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	224.5646	224.5646	4.8900e-003	1.1100e-003	225.0187
Mobile	0.0140	0.1215	0.1835	7.6000e-004	0.0567	7.2000e-004	0.0574	0.0152	6.8000e-004	0.0159	0.0000	70.2911	70.2911	3.5600e-003	0.0000	70.3801
Waste						0.0000	0.0000		0.0000	0.0000	2.5825	0.0000	2.5825	0.1526	0.0000	6.3981
Water						0.0000	0.0000		0.0000	0.0000	2.2412	55.3115	57.5527	0.2314	5.6900e-003	65.0322
<b>Total</b>	<b>0.1710</b>	<b>0.1280</b>	<b>0.1894</b>	<b>8.0000e-004</b>	<b>0.0567</b>	<b>1.2100e-003</b>	<b>0.0579</b>	<b>0.0152</b>	<b>1.1700e-003</b>	<b>0.0164</b>	<b>4.8238</b>	<b>350.1682</b>	<b>354.9919</b>	<b>0.3925</b>	<b>6.8000e-003</b>	<b>366.8301</b>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	48.76	0.00	1.28	40.88	0.00	3.01

**3.0 Construction Detail**

**Construction Phase**

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Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/18/2019	5/1/2019	5	10	
2	Grading	Grading	5/2/2019	5/10/2019	5	7	
3	Building Construction	Building Construction	5/24/2019	6/5/2020	5	271	
4	Paving	Paving	5/4/2020	5/8/2020	5	5	
5	Architectural Coating	Architectural Coating	5/4/2020	5/13/2020	5	8	

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 1.5**

**Acres of Paving: 0.38**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 57,000; Non-Residential Outdoor: 19,000; Striped Parking Area: 993 (Architectural Coating – sqft)**

**OffRoad Equipment**

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	0	6.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48
Grading	Concrete/Industrial Saws	1	8.00	81	0.73

**Trips and VMT**

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Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	2.00	60.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	2.00	151.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	19.00	9.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Demolition - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.4900e-003	0.0000	6.4900e-003	9.8000e-004	0.0000	9.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1500e-003	0.0900	0.0514	9.0000e-005		4.8700e-003	4.8700e-003		4.5700e-003	4.5700e-003	0.0000	7.9181	7.9181	1.8400e-003	0.0000	7.9642
<b>Total</b>	<b>9.1500e-003</b>	<b>0.0900</b>	<b>0.0514</b>	<b>9.0000e-005</b>	<b>6.4900e-003</b>	<b>4.8700e-003</b>	<b>0.0114</b>	<b>9.8000e-004</b>	<b>4.5700e-003</b>	<b>5.5500e-003</b>	<b>0.0000</b>	<b>7.9181</b>	<b>7.9181</b>	<b>1.8400e-003</b>	<b>0.0000</b>	<b>7.9642</b>

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**3.2 Demolition - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.8600e-003	9.9000e-004	2.0000e-005	5.2000e-004	3.0000e-005	5.5000e-004	1.4000e-004	3.0000e-005	1.7000e-004	0.0000	2.1976	2.1976	1.4000e-004	0.0000	2.2012
Vendor	3.0000e-005	1.1500e-003	2.3000e-004	0.0000	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2476	0.2476	2.0000e-005	0.0000	0.2481
Worker	2.0000e-004	1.4000e-004	1.5200e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3798	0.3798	1.0000e-005	0.0000	0.3801
<b>Total</b>	<b>4.0000e-004</b>	<b>9.1500e-003</b>	<b>2.7400e-003</b>	<b>2.0000e-005</b>	<b>1.0200e-003</b>	<b>4.0000e-005</b>	<b>1.0600e-003</b>	<b>2.8000e-004</b>	<b>4.0000e-005</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>2.8251</b>	<b>2.8251</b>	<b>1.7000e-004</b>	<b>0.0000</b>	<b>2.8295</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5300e-003	0.0000	2.5300e-003	3.8000e-004	0.0000	3.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.1500e-003	0.0900	0.0514	9.0000e-005		4.8700e-003	4.8700e-003		4.5700e-003	4.5700e-003	0.0000	7.9181	7.9181	1.8400e-003	0.0000	7.9642
<b>Total</b>	<b>9.1500e-003</b>	<b>0.0900</b>	<b>0.0514</b>	<b>9.0000e-005</b>	<b>2.5300e-003</b>	<b>4.8700e-003</b>	<b>7.4000e-003</b>	<b>3.8000e-004</b>	<b>4.5700e-003</b>	<b>4.9500e-003</b>	<b>0.0000</b>	<b>7.9181</b>	<b>7.9181</b>	<b>1.8400e-003</b>	<b>0.0000</b>	<b>7.9642</b>

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**3.2 Demolition - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.8600e-003	9.9000e-004	2.0000e-005	5.2000e-004	3.0000e-005	5.5000e-004	1.4000e-004	3.0000e-005	1.7000e-004	0.0000	2.1976	2.1976	1.4000e-004	0.0000	2.2012
Vendor	3.0000e-005	1.1500e-003	2.3000e-004	0.0000	6.0000e-005	1.0000e-005	7.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2476	0.2476	2.0000e-005	0.0000	0.2481
Worker	2.0000e-004	1.4000e-004	1.5200e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3798	0.3798	1.0000e-005	0.0000	0.3801
<b>Total</b>	<b>4.0000e-004</b>	<b>9.1500e-003</b>	<b>2.7400e-003</b>	<b>2.0000e-005</b>	<b>1.0200e-003</b>	<b>4.0000e-005</b>	<b>1.0600e-003</b>	<b>2.8000e-004</b>	<b>4.0000e-005</b>	<b>3.2000e-004</b>	<b>0.0000</b>	<b>2.8251</b>	<b>2.8251</b>	<b>1.7000e-004</b>	<b>0.0000</b>	<b>2.8295</b>

**3.3 Grading - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0220	0.0000	0.0220	0.0117	0.0000	0.0117	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2200e-003	0.0712	0.0441	7.0000e-005		3.9600e-003	3.9600e-003		3.7000e-003	3.7000e-003	0.0000	6.5191	6.5191	1.6000e-003	0.0000	6.5591
<b>Total</b>	<b>7.2200e-003</b>	<b>0.0712</b>	<b>0.0441</b>	<b>7.0000e-005</b>	<b>0.0220</b>	<b>3.9600e-003</b>	<b>0.0259</b>	<b>0.0117</b>	<b>3.7000e-003</b>	<b>0.0154</b>	<b>0.0000</b>	<b>6.5191</b>	<b>6.5191</b>	<b>1.6000e-003</b>	<b>0.0000</b>	<b>6.5591</b>

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**3.3 Grading - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.3000e-004	0.0198	2.4900e-003	6.0000e-005	1.3000e-003	7.0000e-005	1.3700e-003	3.6000e-004	7.0000e-005	4.2000e-004	0.0000	5.5307	5.5307	3.6000e-004	0.0000	5.5398
Vendor	2.0000e-005	8.1000e-004	1.6000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1733	0.1733	1.0000e-005	0.0000	0.1737
Worker	1.7000e-004	1.3000e-004	1.3300e-003	0.0000	3.8000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3324	0.3324	1.0000e-005	0.0000	0.3326
<b>Total</b>	<b>6.2000e-004</b>	<b>0.0207</b>	<b>3.9800e-003</b>	<b>6.0000e-005</b>	<b>1.7200e-003</b>	<b>8.0000e-005</b>	<b>1.8100e-003</b>	<b>4.7000e-004</b>	<b>8.0000e-005</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>6.0364</b>	<b>6.0364</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>6.0460</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					8.5600e-003	0.0000	8.5600e-003	4.5600e-003	0.0000	4.5600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2200e-003	0.0712	0.0441	7.0000e-005		3.9600e-003	3.9600e-003		3.7000e-003	3.7000e-003	0.0000	6.5191	6.5191	1.6000e-003	0.0000	6.5591
<b>Total</b>	<b>7.2200e-003</b>	<b>0.0712</b>	<b>0.0441</b>	<b>7.0000e-005</b>	<b>8.5600e-003</b>	<b>3.9600e-003</b>	<b>0.0125</b>	<b>4.5600e-003</b>	<b>3.7000e-003</b>	<b>8.2600e-003</b>	<b>0.0000</b>	<b>6.5191</b>	<b>6.5191</b>	<b>1.6000e-003</b>	<b>0.0000</b>	<b>6.5591</b>

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**3.3 Grading - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.3000e-004	0.0198	2.4900e-003	6.0000e-005	1.3000e-003	7.0000e-005	1.3700e-003	3.6000e-004	7.0000e-005	4.2000e-004	0.0000	5.5307	5.5307	3.6000e-004	0.0000	5.5398
Vendor	2.0000e-005	8.1000e-004	1.6000e-004	0.0000	4.0000e-005	1.0000e-005	5.0000e-005	1.0000e-005	1.0000e-005	2.0000e-005	0.0000	0.1733	0.1733	1.0000e-005	0.0000	0.1737
Worker	1.7000e-004	1.3000e-004	1.3300e-003	0.0000	3.8000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.3324	0.3324	1.0000e-005	0.0000	0.3326
<b>Total</b>	<b>6.2000e-004</b>	<b>0.0207</b>	<b>3.9800e-003</b>	<b>6.0000e-005</b>	<b>1.7200e-003</b>	<b>8.0000e-005</b>	<b>1.8100e-003</b>	<b>4.7000e-004</b>	<b>8.0000e-005</b>	<b>5.4000e-004</b>	<b>0.0000</b>	<b>6.0364</b>	<b>6.0364</b>	<b>3.8000e-004</b>	<b>0.0000</b>	<b>6.0460</b>

**3.4 Building Construction - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1019	1.0695	0.7337	1.1900e-003		0.0623	0.0623		0.0573	0.0573	0.0000	106.7084	106.7084	0.0338	0.0000	107.5524
<b>Total</b>	<b>0.1019</b>	<b>1.0695</b>	<b>0.7337</b>	<b>1.1900e-003</b>		<b>0.0623</b>	<b>0.0623</b>		<b>0.0573</b>	<b>0.0573</b>	<b>0.0000</b>	<b>106.7084</b>	<b>106.7084</b>	<b>0.0338</b>	<b>0.0000</b>	<b>107.5524</b>

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**3.4 Building Construction - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.4100e-003	0.0821	0.0163	1.8000e-004	4.4900e-003	6.2000e-004	5.1100e-003	1.3000e-003	5.9000e-004	1.8900e-003	0.0000	17.6055	17.6055	1.5000e-003	0.0000	17.6430
Worker	7.4600e-003	5.4300e-003	0.0570	1.6000e-004	0.0165	1.0000e-004	0.0166	4.3800e-003	1.0000e-004	4.4800e-003	0.0000	14.2536	14.2536	3.9000e-004	0.0000	14.2634
<b>Total</b>	<b>9.8700e-003</b>	<b>0.0875</b>	<b>0.0733</b>	<b>3.4000e-004</b>	<b>0.0210</b>	<b>7.2000e-004</b>	<b>0.0217</b>	<b>5.6800e-003</b>	<b>6.9000e-004</b>	<b>6.3700e-003</b>	<b>0.0000</b>	<b>31.8591</b>	<b>31.8591</b>	<b>1.8900e-003</b>	<b>0.0000</b>	<b>31.9064</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1019	1.0695	0.7337	1.1900e-003		0.0623	0.0623		0.0573	0.0573	0.0000	106.7083	106.7083	0.0338	0.0000	107.5523
<b>Total</b>	<b>0.1019</b>	<b>1.0695</b>	<b>0.7337</b>	<b>1.1900e-003</b>		<b>0.0623</b>	<b>0.0623</b>		<b>0.0573</b>	<b>0.0573</b>	<b>0.0000</b>	<b>106.7083</b>	<b>106.7083</b>	<b>0.0338</b>	<b>0.0000</b>	<b>107.5523</b>

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**3.4 Building Construction - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.4100e-003	0.0821	0.0163	1.8000e-004	4.4900e-003	6.2000e-004	5.1100e-003	1.3000e-003	5.9000e-004	1.8900e-003	0.0000	17.6055	17.6055	1.5000e-003	0.0000	17.6430
Worker	7.4600e-003	5.4300e-003	0.0570	1.6000e-004	0.0165	1.0000e-004	0.0166	4.3800e-003	1.0000e-004	4.4800e-003	0.0000	14.2536	14.2536	3.9000e-004	0.0000	14.2634
<b>Total</b>	<b>9.8700e-003</b>	<b>0.0875</b>	<b>0.0733</b>	<b>3.4000e-004</b>	<b>0.0210</b>	<b>7.2000e-004</b>	<b>0.0217</b>	<b>5.6800e-003</b>	<b>6.9000e-004</b>	<b>6.3700e-003</b>	<b>0.0000</b>	<b>31.8591</b>	<b>31.8591</b>	<b>1.8900e-003</b>	<b>0.0000</b>	<b>31.9064</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0656	0.6891	0.5105	8.5000e-004		0.0385	0.0385		0.0354	0.0354	0.0000	74.6486	74.6486	0.0241	0.0000	75.2521
<b>Total</b>	<b>0.0656</b>	<b>0.6891</b>	<b>0.5105</b>	<b>8.5000e-004</b>		<b>0.0385</b>	<b>0.0385</b>		<b>0.0354</b>	<b>0.0354</b>	<b>0.0000</b>	<b>74.6486</b>	<b>74.6486</b>	<b>0.0241</b>	<b>0.0000</b>	<b>75.2521</b>

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**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4400e-003	0.0529	0.0104	1.3000e-004	3.2100e-003	3.0000e-004	3.5100e-003	9.3000e-004	2.9000e-004	1.2100e-003	0.0000	12.5034	12.5034	1.0000e-003	0.0000	12.5284
Worker	4.9300e-003	3.4600e-003	0.0369	1.1000e-004	0.0118	7.0000e-005	0.0119	3.1300e-003	7.0000e-005	3.2000e-003	0.0000	9.8718	9.8718	2.5000e-004	0.0000	9.8780
<b>Total</b>	<b>6.3700e-003</b>	<b>0.0564</b>	<b>0.0473</b>	<b>2.4000e-004</b>	<b>0.0150</b>	<b>3.7000e-004</b>	<b>0.0154</b>	<b>4.0600e-003</b>	<b>3.6000e-004</b>	<b>4.4100e-003</b>	<b>0.0000</b>	<b>22.3752</b>	<b>22.3752</b>	<b>1.2500e-003</b>	<b>0.0000</b>	<b>22.4064</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0656	0.6891	0.5105	8.5000e-004		0.0385	0.0385		0.0354	0.0354	0.0000	74.6485	74.6485	0.0241	0.0000	75.2520
<b>Total</b>	<b>0.0656</b>	<b>0.6891</b>	<b>0.5105</b>	<b>8.5000e-004</b>		<b>0.0385</b>	<b>0.0385</b>		<b>0.0354</b>	<b>0.0354</b>	<b>0.0000</b>	<b>74.6485</b>	<b>74.6485</b>	<b>0.0241</b>	<b>0.0000</b>	<b>75.2520</b>

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**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4400e-003	0.0529	0.0104	1.3000e-004	3.2100e-003	3.0000e-004	3.5100e-003	9.3000e-004	2.9000e-004	1.2100e-003	0.0000	12.5034	12.5034	1.0000e-003	0.0000	12.5284
Worker	4.9300e-003	3.4600e-003	0.0369	1.1000e-004	0.0118	7.0000e-005	0.0119	3.1300e-003	7.0000e-005	3.2000e-003	0.0000	9.8718	9.8718	2.5000e-004	0.0000	9.8780
<b>Total</b>	<b>6.3700e-003</b>	<b>0.0564</b>	<b>0.0473</b>	<b>2.4000e-004</b>	<b>0.0150</b>	<b>3.7000e-004</b>	<b>0.0154</b>	<b>4.0600e-003</b>	<b>3.6000e-004</b>	<b>4.4100e-003</b>	<b>0.0000</b>	<b>22.3752</b>	<b>22.3752</b>	<b>1.2500e-003</b>	<b>0.0000</b>	<b>22.4064</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.1500e-003	0.0195	0.0199	3.0000e-005		1.0800e-003	1.0800e-003		1.0000e-003	1.0000e-003	0.0000	2.6114	2.6114	7.4000e-004	0.0000	2.6300
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>2.1500e-003</b>	<b>0.0195</b>	<b>0.0199</b>	<b>3.0000e-005</b>		<b>1.0800e-003</b>	<b>1.0800e-003</b>		<b>1.0000e-003</b>	<b>1.0000e-003</b>	<b>0.0000</b>	<b>2.6114</b>	<b>2.6114</b>	<b>7.4000e-004</b>	<b>0.0000</b>	<b>2.6300</b>

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**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	5.2000e-004	1.0000e-004	0.0000	3.0000e-005	0.0000	3.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.1229	0.1229	1.0000e-005	0.0000	0.1232
Worker	2.1000e-004	1.4000e-004	1.5500e-003	0.0000	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4138	0.4138	1.0000e-005	0.0000	0.4141
<b>Total</b>	<b>2.2000e-004</b>	<b>6.6000e-004</b>	<b>1.6500e-003</b>	<b>0.0000</b>	<b>5.2000e-004</b>	<b>0.0000</b>	<b>5.3000e-004</b>	<b>1.4000e-004</b>	<b>0.0000</b>	<b>1.4000e-004</b>	<b>0.0000</b>	<b>0.5368</b>	<b>0.5368</b>	<b>2.0000e-005</b>	<b>0.0000</b>	<b>0.5373</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.1500e-003	0.0195	0.0199	3.0000e-005		1.0800e-003	1.0800e-003		1.0000e-003	1.0000e-003	0.0000	2.6114	2.6114	7.4000e-004	0.0000	2.6300
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>	<b>2.1500e-003</b>	<b>0.0195</b>	<b>0.0199</b>	<b>3.0000e-005</b>		<b>1.0800e-003</b>	<b>1.0800e-003</b>		<b>1.0000e-003</b>	<b>1.0000e-003</b>	<b>0.0000</b>	<b>2.6114</b>	<b>2.6114</b>	<b>7.4000e-004</b>	<b>0.0000</b>	<b>2.6300</b>





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**3.6 Architectural Coating - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	5.5000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1471	0.1471	0.0000	0.0000	0.1472
<b>Total</b>	<b>7.0000e-005</b>	<b>5.0000e-005</b>	<b>5.5000e-004</b>	<b>0.0000</b>	<b>1.8000e-004</b>	<b>0.0000</b>	<b>1.8000e-004</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>5.0000e-005</b>	<b>0.0000</b>	<b>0.1471</b>	<b>0.1471</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.1472</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0140	0.1215	0.1835	7.6000e-004	0.0567	7.2000e-004	0.0574	0.0152	6.8000e-004	0.0159	0.0000	70.2911	70.2911	3.5600e-003	0.0000	70.3801
Unmitigated	0.0140	0.1215	0.1835	7.6000e-004	0.0567	7.2000e-004	0.0574	0.0152	6.8000e-004	0.0159	0.0000	70.2911	70.2911	3.5600e-003	0.0000	70.3801

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	39.90	39.90	39.90	148,471	148,471
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	39.90	39.90	39.90	148,471	148,471

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	16.60	8.40	6.90	50.00	50.00	0.00	77	19	4
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120
Other Non-Asphalt Surfaces	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120

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**5.0 Energy Detail**

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	217.5280	217.5280	4.7600e-003	9.8000e-004	217.9404
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	217.5280	217.5280	4.7600e-003	9.8000e-004	217.9404
NaturalGas Mitigated	7.1000e-004	6.4600e-003	5.4300e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0366	7.0366	1.3000e-004	1.3000e-004	7.0784
NaturalGas Unmitigated	7.1000e-004	6.4600e-003	5.4300e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0366	7.0366	1.3000e-004	1.3000e-004	7.0784

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**5.2 Energy by Land Use - Natural Gas**

**Unmitigated**

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	131860	7.1000e-004	6.4600e-003	5.4300e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0366	7.0366	1.3000e-004	1.3000e-004	7.0784
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>7.1000e-004</b>	<b>6.4600e-003</b>	<b>5.4300e-003</b>	<b>4.0000e-005</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>7.0366</b>	<b>7.0366</b>	<b>1.3000e-004</b>	<b>1.3000e-004</b>	<b>7.0784</b>

**Mitigated**

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Office Building	131860	7.1000e-004	6.4600e-003	5.4300e-003	4.0000e-005		4.9000e-004	4.9000e-004		4.9000e-004	4.9000e-004	0.0000	7.0366	7.0366	1.3000e-004	1.3000e-004	7.0784
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>7.1000e-004</b>	<b>6.4600e-003</b>	<b>5.4300e-003</b>	<b>4.0000e-005</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>		<b>4.9000e-004</b>	<b>4.9000e-004</b>	<b>0.0000</b>	<b>7.0366</b>	<b>7.0366</b>	<b>1.3000e-004</b>	<b>1.3000e-004</b>	<b>7.0784</b>

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**5.3 Energy by Land Use - Electricity**

**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	361760	217.5280	4.7600e-003	9.8000e-004	217.9404
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>217.5280</b>	<b>4.7600e-003</b>	<b>9.8000e-004</b>	<b>217.9404</b>

**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Office Building	361760	217.5280	4.7600e-003	9.8000e-004	217.9404
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>217.5280</b>	<b>4.7600e-003</b>	<b>9.8000e-004</b>	<b>217.9404</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1563	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0200e-003
Unmitigated	0.1563	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0200e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0178					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1384					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0200e-003
<b>Total</b>	<b>0.1563</b>	<b>0.0000</b>	<b>4.9000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>9.5000e-004</b>	<b>9.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0200e-003</b>

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**6.2 Area by SubCategory**

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0178					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1384					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0200e-003
<b>Total</b>	<b>0.1563</b>	<b>0.0000</b>	<b>4.9000e-004</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>9.5000e-004</b>	<b>9.5000e-004</b>	<b>0.0000</b>	<b>0.0000</b>	<b>1.0200e-003</b>

**7.0 Water Detail**

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**7.1 Mitigation Measures Water**

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	57.5527	0.2314	5.6900e-003	65.0322
Unmitigated	57.5527	0.2314	5.6900e-003	65.0322

**7.2 Water by Land Use**

**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	7.06442 / 0	57.5527	0.2314	5.6900e-003	65.0322
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>57.5527</b>	<b>0.2314</b>	<b>5.6900e-003</b>	<b>65.0322</b>

UCR PGE-1 - Riverside-South Coast County, Annual

**7.2 Water by Land Use**

**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Office Building	7.06442 / 0	57.5527	0.2314	5.6900e-003	65.0322
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>57.5527</b>	<b>0.2314</b>	<b>5.6900e-003</b>	<b>65.0322</b>

**8.0 Waste Detail**

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**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services

UCR PGE-1 - Riverside-South Coast County, Annual

**Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	2.5825	0.1526	0.0000	6.3981
Unmitigated	7.1737	0.4240	0.0000	17.7725

**8.2 Waste by Land Use**

**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	35.34	7.1737	0.4240	0.0000	17.7725
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>7.1737</b>	<b>0.4240</b>	<b>0.0000</b>	<b>17.7725</b>

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**8.2 Waste by Land Use**

**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Office Building	12.7224	2.5825	0.1526	0.0000	6.3981
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>2.5825</b>	<b>0.1526</b>	<b>0.0000</b>	<b>6.3981</b>

**9.0 Operational Offroad**

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

**Fire Pumps and Emergency Generators**

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

UCR PGE-1 - Riverside-South Coast County, Annual

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CalEEMod – Summer

UCR PGE-1 - Riverside-South Coast County, Summer

**UCR PGE-1**  
**Riverside-South Coast County, Summer**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	38.00	1000sqft	0.87	38,000.00	0
Other Non-Asphalt Surfaces	0.38	Acre	0.38	16,552.80	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2020
<b>Utility Company</b>	Riverside Public Utilities				
<b>CO2 Intensity (lb/MWhr)</b>	1325.65	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

UCR PGE-1 - Riverside-South Coast County, Summer

Project Characteristics -

Land Use - Per site plan

Construction Phase - per applicant

Demolition -

Grading - 1,210 cy export

Off-road Equipment - per applicant

Off-road Equipment - per applicant

Off-road Equipment - per applicant

Off-road Equipment - per applicant; assume 8 hrs/day

Off-road Equipment - per applicant, airless sprayer used

Trips and VMT - water truck trips added

Vehicle Trips - increase of 20 new personnel

Water And Wastewater - water demand per applicant

Construction Off-road Equipment Mitigation - water site 3x daily per Rule 403

Waste Mitigation - per Calrecycle

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	8.00
tblConstructionPhase	NumDays	200.00	271.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	7.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	3/24/2020	5/13/2020
tblConstructionPhase	PhaseEndDate	2/25/2020	6/5/2020
tblConstructionPhase	PhaseEndDate	5/15/2019	5/1/2019
tblConstructionPhase	PhaseEndDate	5/21/2019	5/10/2019
tblConstructionPhase	PhaseEndDate	3/10/2020	5/8/2020

UCR PGE-1 - Riverside-South Coast County, Summer

tblConstructionPhase	PhaseStartDate	3/11/2020	5/4/2020
tblConstructionPhase	PhaseStartDate	5/22/2019	5/24/2019
tblConstructionPhase	PhaseStartDate	5/16/2019	5/2/2019
tblConstructionPhase	PhaseStartDate	2/26/2020	5/4/2020
tblGrading	AcresOfGrading	0.00	1.50
tblGrading	MaterialExported	0.00	1,210.00
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

## UCR PGE-1 - Riverside-South Coast County, Summer

tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblVehicleTrips	CC_TTP	48.00	50.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	50.00
tblVehicleTrips	ST_TR	2.46	1.05
tblVehicleTrips	WD_TR	11.03	1.05
tblWater	IndoorWaterUseRate	6,753,882.42	7,064,423.00
tblWater	OutdoorWaterUseRate	4,139,476.32	0.00

## 2.0 Emissions Summary

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UCR PGE-1 - Riverside-South Coast County, Summer

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
Energy	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Mobile	0.0901	0.6526	1.1347	4.4300e-003	0.3167	3.9600e-003	0.3206	0.0847	3.7300e-003	0.0885		451.0831	451.0831	0.0216		451.6237
<b>Total</b>	<b>0.9504</b>	<b>0.6881</b>	<b>1.1684</b>	<b>4.6400e-003</b>	<b>0.3167</b>	<b>6.6600e-003</b>	<b>0.3233</b>	<b>0.0847</b>	<b>6.4300e-003</b>	<b>0.0912</b>		<b>493.5928</b>	<b>493.5928</b>	<b>0.0225</b>	<b>7.8000e-004</b>	<b>494.3865</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
Energy	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Mobile	0.0901	0.6526	1.1347	4.4300e-003	0.3167	3.9600e-003	0.3206	0.0847	3.7300e-003	0.0885		451.0831	451.0831	0.0216		451.6237
<b>Total</b>	<b>0.9504</b>	<b>0.6881</b>	<b>1.1684</b>	<b>4.6400e-003</b>	<b>0.3167</b>	<b>6.6600e-003</b>	<b>0.3233</b>	<b>0.0847</b>	<b>6.4300e-003</b>	<b>0.0912</b>		<b>493.5928</b>	<b>493.5928</b>	<b>0.0225</b>	<b>7.8000e-004</b>	<b>494.3865</b>

UCR PGE-1 - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/18/2019	5/1/2019	5	10	
2	Grading	Grading	5/2/2019	5/10/2019	5	7	
3	Building Construction	Building Construction	5/24/2019	6/5/2020	5	271	
4	Paving	Paving	5/4/2020	5/8/2020	5	5	
5	Architectural Coating	Architectural Coating	5/4/2020	5/13/2020	5	8	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.38

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 57,000; Non-Residential Outdoor: 19,000; Striped Parking Area: 993 (Architectural Coating – sqft)

#### OffRoad Equipment

## UCR PGE-1 - Riverside-South Coast County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	0	6.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48
Grading	Concrete/Industrial Saws	1	8.00	81	0.73

**Trips and VMT**

UCR PGE-1 - Riverside-South Coast County, Summer

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	2.00	60.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	2.00	151.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	19.00	9.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Demolition - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2981	0.0000	1.2981	0.1965	0.0000	0.1965			0.0000			0.0000
Off-Road	1.8294	18.0003	10.2890	0.0179		0.9742	0.9742		0.9146	0.9146		1,745.6360	1,745.6360	0.4065		1,755.7986
<b>Total</b>	<b>1.8294</b>	<b>18.0003</b>	<b>10.2890</b>	<b>0.0179</b>	<b>1.2981</b>	<b>0.9742</b>	<b>2.2723</b>	<b>0.1965</b>	<b>0.9146</b>	<b>1.1112</b>		<b>1,745.6360</b>	<b>1,745.6360</b>	<b>0.4065</b>		<b>1,755.7986</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.2 Demolition - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0337	1.5328	0.1843	4.6200e-003	0.1050	5.5400e-003	0.1105	0.0288	5.3000e-003	0.0341		489.5951	489.5951	0.0304		490.3555
Vendor	6.6600e-003	0.2277	0.0427	5.3000e-004	0.0128	1.7300e-003	0.0145	3.6900e-003	1.6500e-003	5.3400e-003		55.4605	55.4605	4.4400e-003		55.5715
Worker	0.0441	0.0270	0.3554	9.1000e-004	0.0894	5.5000e-004	0.0900	0.0237	5.1000e-004	0.0242		91.0018	91.0018	2.5500e-003		91.0655
<b>Total</b>	<b>0.0844</b>	<b>1.7875</b>	<b>0.5824</b>	<b>6.0600e-003</b>	<b>0.2072</b>	<b>7.8200e-003</b>	<b>0.2150</b>	<b>0.0562</b>	<b>7.4600e-003</b>	<b>0.0636</b>		<b>636.0574</b>	<b>636.0574</b>	<b>0.0374</b>		<b>636.9924</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5062	0.0000	0.5062	0.0767	0.0000	0.0767			0.0000			0.0000
Off-Road	1.8294	18.0003	10.2890	0.0179		0.9742	0.9742		0.9146	0.9146	0.0000	1,745.6360	1,745.6360	0.4065		1,755.7986
<b>Total</b>	<b>1.8294</b>	<b>18.0003</b>	<b>10.2890</b>	<b>0.0179</b>	<b>0.5062</b>	<b>0.9742</b>	<b>1.4805</b>	<b>0.0767</b>	<b>0.9146</b>	<b>0.9913</b>	<b>0.0000</b>	<b>1,745.6360</b>	<b>1,745.6360</b>	<b>0.4065</b>		<b>1,755.7986</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.2 Demolition - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0337	1.5328	0.1843	4.6200e-003	0.1050	5.5400e-003	0.1105	0.0288	5.3000e-003	0.0341		489.5951	489.5951	0.0304		490.3555
Vendor	6.6600e-003	0.2277	0.0427	5.3000e-004	0.0128	1.7300e-003	0.0145	3.6900e-003	1.6500e-003	5.3400e-003		55.4605	55.4605	4.4400e-003		55.5715
Worker	0.0441	0.0270	0.3554	9.1000e-004	0.0894	5.5000e-004	0.0900	0.0237	5.1000e-004	0.0242		91.0018	91.0018	2.5500e-003		91.0655
<b>Total</b>	<b>0.0844</b>	<b>1.7875</b>	<b>0.5824</b>	<b>6.0600e-003</b>	<b>0.2072</b>	<b>7.8200e-003</b>	<b>0.2150</b>	<b>0.0562</b>	<b>7.4600e-003</b>	<b>0.0636</b>		<b>636.0574</b>	<b>636.0574</b>	<b>0.0374</b>		<b>636.9924</b>

**3.3 Grading - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2712	0.0000	6.2712	3.3381	0.0000	3.3381			0.0000			0.0000
Off-Road	2.0622	20.3377	12.5917	0.0210		1.1303	1.1303		1.0582	1.0582		2,053.1779	2,053.1779	0.5038		2,065.7730
<b>Total</b>	<b>2.0622</b>	<b>20.3377</b>	<b>12.5917</b>	<b>0.0210</b>	<b>6.2712</b>	<b>1.1303</b>	<b>7.4015</b>	<b>3.3381</b>	<b>1.0582</b>	<b>4.3963</b>		<b>2,053.1779</b>	<b>2,053.1779</b>	<b>0.5038</b>		<b>2,065.7730</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.3 Grading - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1212	5.5106	0.6627	0.0166	0.3774	0.0199	0.3973	0.1035	0.0191	0.1225		1,760.2108	1,760.2108	0.1094		1,762.9448
Vendor	6.6600e-003	0.2277	0.0427	5.3000e-004	0.0128	1.7300e-003	0.0145	3.6900e-003	1.6500e-003	5.3400e-003		55.4605	55.4605	4.4400e-003		55.5715
Worker	0.0551	0.0338	0.4443	1.1400e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		113.7522	113.7522	3.1800e-003		113.8319
<b>Total</b>	<b>0.1829</b>	<b>5.7721</b>	<b>1.1496</b>	<b>0.0183</b>	<b>0.5020</b>	<b>0.0223</b>	<b>0.5243</b>	<b>0.1368</b>	<b>0.0213</b>	<b>0.1581</b>		<b>1,929.4235</b>	<b>1,929.4235</b>	<b>0.1170</b>		<b>1,932.3481</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.4458	0.0000	2.4458	1.3019	0.0000	1.3019			0.0000			0.0000
Off-Road	2.0622	20.3377	12.5917	0.0210		1.1303	1.1303		1.0582	1.0582	0.0000	2,053.1779	2,053.1779	0.5038		2,065.7730
<b>Total</b>	<b>2.0622</b>	<b>20.3377</b>	<b>12.5917</b>	<b>0.0210</b>	<b>2.4458</b>	<b>1.1303</b>	<b>3.5760</b>	<b>1.3019</b>	<b>1.0582</b>	<b>2.3600</b>	<b>0.0000</b>	<b>2,053.1779</b>	<b>2,053.1779</b>	<b>0.5038</b>		<b>2,065.7730</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.3 Grading - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1212	5.5106	0.6627	0.0166	0.3774	0.0199	0.3973	0.1035	0.0191	0.1225		1,760.2108	1,760.2108	0.1094		1,762.9448
Vendor	6.6600e-003	0.2277	0.0427	5.3000e-004	0.0128	1.7300e-003	0.0145	3.6900e-003	1.6500e-003	5.3400e-003		55.4605	55.4605	4.4400e-003		55.5715
Worker	0.0551	0.0338	0.4443	1.1400e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		113.7522	113.7522	3.1800e-003		113.8319
<b>Total</b>	<b>0.1829</b>	<b>5.7721</b>	<b>1.1496</b>	<b>0.0183</b>	<b>0.5020</b>	<b>0.0223</b>	<b>0.5243</b>	<b>0.1368</b>	<b>0.0213</b>	<b>0.1581</b>		<b>1,929.4235</b>	<b>1,929.4235</b>	<b>0.1170</b>		<b>1,932.3481</b>

**3.4 Building Construction - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250		1,488.9351	1,488.9351	0.4711		1,500.7122
<b>Total</b>	<b>1.2895</b>	<b>13.5384</b>	<b>9.2868</b>	<b>0.0150</b>		<b>0.7880</b>	<b>0.7880</b>		<b>0.7250</b>	<b>0.7250</b>		<b>1,488.9351</b>	<b>1,488.9351</b>	<b>0.4711</b>		<b>1,500.7122</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.4 Building Construction - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0300	1.0245	0.1920	2.3700e-003	0.0576	7.7800e-003	0.0654	0.0166	7.4400e-003	0.0240		249.5724	249.5724	0.0200		250.0716
Worker	0.1046	0.0642	0.8441	2.1700e-003	0.2124	1.3100e-003	0.2137	0.0563	1.2100e-003	0.0575		216.1292	216.1292	6.0500e-003		216.2805
<b>Total</b>	<b>0.1346</b>	<b>1.0887</b>	<b>1.0361</b>	<b>4.5400e-003</b>	<b>0.2700</b>	<b>9.0900e-003</b>	<b>0.2791</b>	<b>0.0729</b>	<b>8.6500e-003</b>	<b>0.0816</b>		<b>465.7016</b>	<b>465.7016</b>	<b>0.0260</b>		<b>466.3521</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250	0.0000	1,488.9351	1,488.9351	0.4711		1,500.7122
<b>Total</b>	<b>1.2895</b>	<b>13.5384</b>	<b>9.2868</b>	<b>0.0150</b>		<b>0.7880</b>	<b>0.7880</b>		<b>0.7250</b>	<b>0.7250</b>	<b>0.0000</b>	<b>1,488.9351</b>	<b>1,488.9351</b>	<b>0.4711</b>		<b>1,500.7122</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.4 Building Construction - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0300	1.0245	0.1920	2.3700e-003	0.0576	7.7800e-003	0.0654	0.0166	7.4400e-003	0.0240		249.5724	249.5724	0.0200		250.0716
Worker	0.1046	0.0642	0.8441	2.1700e-003	0.2124	1.3100e-003	0.2137	0.0563	1.2100e-003	0.0575		216.1292	216.1292	6.0500e-003		216.2805
<b>Total</b>	<b>0.1346</b>	<b>1.0887</b>	<b>1.0361</b>	<b>4.5400e-003</b>	<b>0.2700</b>	<b>9.0900e-003</b>	<b>0.2791</b>	<b>0.0729</b>	<b>8.6500e-003</b>	<b>0.0816</b>		<b>465.7016</b>	<b>465.7016</b>	<b>0.0260</b>		<b>466.3521</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273		1,456.3883	1,456.3883	0.4710		1,468.1640
<b>Total</b>	<b>1.1604</b>	<b>12.1968</b>	<b>9.0353</b>	<b>0.0150</b>		<b>0.6818</b>	<b>0.6818</b>		<b>0.6273</b>	<b>0.6273</b>		<b>1,456.3883</b>	<b>1,456.3883</b>	<b>0.4710</b>		<b>1,468.1640</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0251	0.9260	0.1694	2.3500e-003	0.0576	5.2700e-003	0.0629	0.0166	5.0400e-003	0.0216		247.8518	247.8518	0.0186		248.3166
Worker	0.0967	0.0572	0.7661	2.1000e-003	0.2124	1.2900e-003	0.2137	0.0563	1.1800e-003	0.0575		209.3030	209.3030	5.3600e-003		209.4371
<b>Total</b>	<b>0.1218</b>	<b>0.9832</b>	<b>0.9355</b>	<b>4.4500e-003</b>	<b>0.2700</b>	<b>6.5600e-003</b>	<b>0.2766</b>	<b>0.0729</b>	<b>6.2200e-003</b>	<b>0.0791</b>		<b>457.1548</b>	<b>457.1548</b>	<b>0.0240</b>		<b>457.7537</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273	0.0000	1,456.3883	1,456.3883	0.4710		1,468.1639
<b>Total</b>	<b>1.1604</b>	<b>12.1968</b>	<b>9.0353</b>	<b>0.0150</b>		<b>0.6818</b>	<b>0.6818</b>		<b>0.6273</b>	<b>0.6273</b>	<b>0.0000</b>	<b>1,456.3883</b>	<b>1,456.3883</b>	<b>0.4710</b>		<b>1,468.1639</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0251	0.9260	0.1694	2.3500e-003	0.0576	5.2700e-003	0.0629	0.0166	5.0400e-003	0.0216		247.8518	247.8518	0.0186		248.3166
Worker	0.0967	0.0572	0.7661	2.1000e-003	0.2124	1.2900e-003	0.2137	0.0563	1.1800e-003	0.0575		209.3030	209.3030	5.3600e-003		209.4371
<b>Total</b>	<b>0.1218</b>	<b>0.9832</b>	<b>0.9355</b>	<b>4.4500e-003</b>	<b>0.2700</b>	<b>6.5600e-003</b>	<b>0.2766</b>	<b>0.0729</b>	<b>6.2200e-003</b>	<b>0.0791</b>		<b>457.1548</b>	<b>457.1548</b>	<b>0.0240</b>		<b>457.7537</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8601	7.8004	7.9413	0.0127		0.4302	0.4302		0.4003	0.4003		1,151.4284	1,151.4284	0.3280		1,159.6289
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8601</b>	<b>7.8004</b>	<b>7.9413</b>	<b>0.0127</b>		<b>0.4302</b>	<b>0.4302</b>		<b>0.4003</b>	<b>0.4003</b>		<b>1,151.4284</b>	<b>1,151.4284</b>	<b>0.3280</b>		<b>1,159.6289</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0128	1.1700e-003	0.0140	3.6900e-003	1.1200e-003	4.8100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.0916	0.0542	0.7258	1.9900e-003	0.2012	1.2200e-003	0.2024	0.0534	1.1200e-003	0.0545		198.2870	198.2870	5.0800e-003		198.4141
<b>Total</b>	<b>0.0972</b>	<b>0.2600</b>	<b>0.7634</b>	<b>2.5100e-003</b>	<b>0.2140</b>	<b>2.3900e-003</b>	<b>0.2164</b>	<b>0.0571</b>	<b>2.2400e-003</b>	<b>0.0593</b>		<b>253.3652</b>	<b>253.3652</b>	<b>9.2100e-003</b>		<b>253.5955</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8601	7.8004	7.9413	0.0127		0.4302	0.4302		0.4003	0.4003	0.0000	1,151.4284	1,151.4284	0.3280		1,159.6289
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8601</b>	<b>7.8004</b>	<b>7.9413</b>	<b>0.0127</b>		<b>0.4302</b>	<b>0.4302</b>		<b>0.4003</b>	<b>0.4003</b>	<b>0.0000</b>	<b>1,151.4284</b>	<b>1,151.4284</b>	<b>0.3280</b>		<b>1,159.6289</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.5700e-003	0.2058	0.0377	5.2000e-004	0.0128	1.1700e-003	0.0140	3.6900e-003	1.1200e-003	4.8100e-003		55.0782	55.0782	4.1300e-003		55.1815
Worker	0.0916	0.0542	0.7258	1.9900e-003	0.2012	1.2200e-003	0.2024	0.0534	1.1200e-003	0.0545		198.2870	198.2870	5.0800e-003		198.4141
<b>Total</b>	<b>0.0972</b>	<b>0.2600</b>	<b>0.7634</b>	<b>2.5100e-003</b>	<b>0.2140</b>	<b>2.3900e-003</b>	<b>0.2164</b>	<b>0.0571</b>	<b>2.2400e-003</b>	<b>0.0593</b>		<b>253.3652</b>	<b>253.3652</b>	<b>9.2100e-003</b>		<b>253.5955</b>

**3.6 Architectural Coating - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	44.6078					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
<b>Total</b>	<b>44.6078</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.6 Architectural Coating - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0204	0.0120	0.1613	4.4000e-004	0.0447	2.7000e-004	0.0450	0.0119	2.5000e-004	0.0121		44.0638	44.0638	1.1300e-003		44.0920
<b>Total</b>	<b>0.0204</b>	<b>0.0120</b>	<b>0.1613</b>	<b>4.4000e-004</b>	<b>0.0447</b>	<b>2.7000e-004</b>	<b>0.0450</b>	<b>0.0119</b>	<b>2.5000e-004</b>	<b>0.0121</b>		<b>44.0638</b>	<b>44.0638</b>	<b>1.1300e-003</b>		<b>44.0920</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	44.6078					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
<b>Total</b>	<b>44.6078</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**3.6 Architectural Coating - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0204	0.0120	0.1613	4.4000e-004	0.0447	2.7000e-004	0.0450	0.0119	2.5000e-004	0.0121		44.0638	44.0638	1.1300e-003		44.0920
<b>Total</b>	<b>0.0204</b>	<b>0.0120</b>	<b>0.1613</b>	<b>4.4000e-004</b>	<b>0.0447</b>	<b>2.7000e-004</b>	<b>0.0450</b>	<b>0.0119</b>	<b>2.5000e-004</b>	<b>0.0121</b>		<b>44.0638</b>	<b>44.0638</b>	<b>1.1300e-003</b>		<b>44.0920</b>

**4.0 Operational Detail - Mobile**

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**4.1 Mitigation Measures Mobile**

UCR PGE-1 - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0901	0.6526	1.1347	4.4300e-003	0.3167	3.9600e-003	0.3206	0.0847	3.7300e-003	0.0885		451.0831	451.0831	0.0216		451.6237
Unmitigated	0.0901	0.6526	1.1347	4.4300e-003	0.3167	3.9600e-003	0.3206	0.0847	3.7300e-003	0.0885		451.0831	451.0831	0.0216		451.6237

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	39.90	39.90	39.90	148,471	148,471
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	39.90	39.90	39.90	148,471	148,471

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	16.60	8.40	6.90	50.00	50.00	0.00	77	19	4
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120
Other Non-Asphalt Surfaces	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120

UCR PGE-1 - Riverside-South Coast County, Summer

**5.0 Energy Detail**

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Historical Energy Use: N

**5.1 Mitigation Measures Energy**

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
NaturalGas Unmitigated	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538

UCR PGE-1 - Riverside-South Coast County, Summer

**5.2 Energy by Land Use - Natural Gas**

**Unmitigated**

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	361.26	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>3.9000e-003</b>	<b>0.0354</b>	<b>0.0298</b>	<b>2.1000e-004</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>42.5012</b>	<b>42.5012</b>	<b>8.1000e-004</b>	<b>7.8000e-004</b>	<b>42.7538</b>

**Mitigated**

	Natural Gas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	0.36126	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>3.9000e-003</b>	<b>0.0354</b>	<b>0.0298</b>	<b>2.1000e-004</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>42.5012</b>	<b>42.5012</b>	<b>8.1000e-004</b>	<b>7.8000e-004</b>	<b>42.7538</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

UCR PGE-1 - Riverside-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
Unmitigated	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0978					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.7583					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.7000e-004	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
<b>Total</b>	<b>0.8564</b>	<b>4.0000e-005</b>	<b>3.9400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>8.4000e-003</b>	<b>8.4000e-003</b>	<b>2.0000e-005</b>		<b>8.9600e-003</b>

UCR PGE-1 - Riverside-South Coast County, Summer

**6.2 Area by SubCategory**

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0978					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.7583					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.7000e-004	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
<b>Total</b>	<b>0.8564</b>	<b>4.0000e-005</b>	<b>3.9400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>8.4000e-003</b>	<b>8.4000e-003</b>	<b>2.0000e-005</b>		<b>8.9600e-003</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

**8.0 Waste Detail**

**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services

**9.0 Operational Offroad**

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

UCR PGE-1 - Riverside-South Coast County, Summer

**Fire Pumps and Emergency Generators**

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

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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**User Defined Equipment**

Equipment Type	Number
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**11.0 Vegetation**

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CalEEMod – Winter

UCR PGE-1 - Riverside-South Coast County, Winter

**UCR PGE-1**  
**Riverside-South Coast County, Winter**

**1.0 Project Characteristics**

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**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Office Building	38.00	1000sqft	0.87	38,000.00	0
Other Non-Asphalt Surfaces	0.38	Acre	0.38	16,552.80	0

**1.2 Other Project Characteristics**

<b>Urbanization</b>	Urban	<b>Wind Speed (m/s)</b>	2.4	<b>Precipitation Freq (Days)</b>	28
<b>Climate Zone</b>	10			<b>Operational Year</b>	2020
<b>Utility Company</b>	Riverside Public Utilities				
<b>CO2 Intensity (lb/MWhr)</b>	1325.65	<b>CH4 Intensity (lb/MWhr)</b>	0.029	<b>N2O Intensity (lb/MWhr)</b>	0.006

**1.3 User Entered Comments & Non-Default Data**

UCR PGE-1 - Riverside-South Coast County, Winter

Project Characteristics -

Land Use - Per site plan

Construction Phase - per applicant

Demolition -

Grading - 1,210 cy export

Off-road Equipment - per applicant

Off-road Equipment - per applicant

Off-road Equipment - per applicant

Off-road Equipment - per applicant; assume 8 hrs/day

Off-road Equipment - per applicant, airless sprayer used

Trips and VMT - water truck trips added

Vehicle Trips - increase of 20 new personnel

Water And Wastewater - water demand per applicant

Construction Off-road Equipment Mitigation - water site 3x daily per Rule 403

Waste Mitigation - per Calrecycle

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	8.00
tblConstructionPhase	NumDays	200.00	271.00
tblConstructionPhase	NumDays	20.00	10.00
tblConstructionPhase	NumDays	4.00	7.00
tblConstructionPhase	NumDays	10.00	5.00
tblConstructionPhase	PhaseEndDate	3/24/2020	5/13/2020
tblConstructionPhase	PhaseEndDate	2/25/2020	6/5/2020
tblConstructionPhase	PhaseEndDate	5/15/2019	5/1/2019
tblConstructionPhase	PhaseEndDate	5/21/2019	5/10/2019
tblConstructionPhase	PhaseEndDate	3/10/2020	5/8/2020

UCR PGE-1 - Riverside-South Coast County, Winter

tblConstructionPhase	PhaseStartDate	3/11/2020	5/4/2020
tblConstructionPhase	PhaseStartDate	5/22/2019	5/24/2019
tblConstructionPhase	PhaseStartDate	5/16/2019	5/2/2019
tblConstructionPhase	PhaseStartDate	2/26/2020	5/4/2020
tblGrading	AcresOfGrading	0.00	1.50
tblGrading	MaterialExported	0.00	1,210.00
tblOffRoadEquipment	OffRoadEquipmentType		Concrete/Industrial Saws
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	6.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblTripsAndVMT	VendorTripNumber	0.00	2.00

## UCR PGE-1 - Riverside-South Coast County, Winter

tblTripsAndVMT	VendorTripNumber	0.00	2.00
tblVehicleTrips	CC_TTP	48.00	50.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	50.00
tblVehicleTrips	ST_TR	2.46	1.05
tblVehicleTrips	WD_TR	11.03	1.05
tblWater	IndoorWaterUseRate	6,753,882.42	7,064,423.00
tblWater	OutdoorWaterUseRate	4,139,476.32	0.00

## 2.0 Emissions Summary

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UCR PGE-1 - Riverside-South Coast County, Winter

**2.2 Overall Operational**

**Unmitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
Energy	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Mobile	0.0769	0.6565	0.9765	4.0800e-003	0.3167	3.9900e-003	0.3207	0.0847	3.7600e-003	0.0885		416.5515	416.5515	0.0221		417.1041
<b>Total</b>	<b>0.9372</b>	<b>0.6920</b>	<b>1.0102</b>	<b>4.2900e-003</b>	<b>0.3167</b>	<b>6.6900e-003</b>	<b>0.3234</b>	<b>0.0847</b>	<b>6.4600e-003</b>	<b>0.0912</b>		<b>459.0611</b>	<b>459.0611</b>	<b>0.0229</b>	<b>7.8000e-004</b>	<b>459.8668</b>

**Mitigated Operational**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
Energy	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Mobile	0.0769	0.6565	0.9765	4.0800e-003	0.3167	3.9900e-003	0.3207	0.0847	3.7600e-003	0.0885		416.5515	416.5515	0.0221		417.1041
<b>Total</b>	<b>0.9372</b>	<b>0.6920</b>	<b>1.0102</b>	<b>4.2900e-003</b>	<b>0.3167</b>	<b>6.6900e-003</b>	<b>0.3234</b>	<b>0.0847</b>	<b>6.4600e-003</b>	<b>0.0912</b>		<b>459.0611</b>	<b>459.0611</b>	<b>0.0229</b>	<b>7.8000e-004</b>	<b>459.8668</b>

UCR PGE-1 - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### 3.0 Construction Detail

#### Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/18/2019	5/1/2019	5	10	
2	Grading	Grading	5/2/2019	5/10/2019	5	7	
3	Building Construction	Building Construction	5/24/2019	6/5/2020	5	271	
4	Paving	Paving	5/4/2020	5/8/2020	5	5	
5	Architectural Coating	Architectural Coating	5/4/2020	5/13/2020	5	8	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0.38

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 57,000; Non-Residential Outdoor: 19,000; Striped Parking Area: 993 (Architectural Coating – sqft)

#### OffRoad Equipment

## UCR PGE-1 - Riverside-South Coast County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Graders	0	6.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Cement and Mortar Mixers	4	8.00	9	0.56
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	8.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	0	6.00	78	0.48
Grading	Concrete/Industrial Saws	1	8.00	81	0.73

**Trips and VMT**

UCR PGE-1 - Riverside-South Coast County, Winter

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	2.00	60.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	2.00	151.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	19.00	9.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

**3.1 Mitigation Measures Construction**

Water Exposed Area

**3.2 Demolition - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2981	0.0000	1.2981	0.1965	0.0000	0.1965			0.0000			0.0000
Off-Road	1.8294	18.0003	10.2890	0.0179		0.9742	0.9742		0.9146	0.9146		1,745.6360	1,745.6360	0.4065		1,755.7986
<b>Total</b>	<b>1.8294</b>	<b>18.0003</b>	<b>10.2890</b>	<b>0.0179</b>	<b>1.2981</b>	<b>0.9742</b>	<b>2.2723</b>	<b>0.1965</b>	<b>0.9146</b>	<b>1.1112</b>		<b>1,745.6360</b>	<b>1,745.6360</b>	<b>0.4065</b>		<b>1,755.7986</b>

UCR PGE-1 - Riverside-South Coast County, Winter

**3.2 Demolition - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0354	1.5482	0.2167	4.5000e-003	0.1050	5.6400e-003	0.1106	0.0288	5.3900e-003	0.0342		477.4537	477.4537	0.0333		478.2864
Vendor	6.9900e-003	0.2272	0.0496	5.1000e-004	0.0128	1.7500e-003	0.0146	3.6900e-003	1.6700e-003	5.3600e-003		53.3877	53.3877	4.9300e-003		53.5110
Worker	0.0430	0.0280	0.2880	8.2000e-004	0.0894	5.5000e-004	0.0900	0.0237	5.1000e-004	0.0242		81.6414	81.6414	2.2200e-003		81.6968
<b>Total</b>	<b>0.0855</b>	<b>1.8033</b>	<b>0.5543</b>	<b>5.8300e-003</b>	<b>0.2072</b>	<b>7.9400e-003</b>	<b>0.2151</b>	<b>0.0562</b>	<b>7.5700e-003</b>	<b>0.0638</b>		<b>612.4828</b>	<b>612.4828</b>	<b>0.0405</b>		<b>613.4941</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.5062	0.0000	0.5062	0.0767	0.0000	0.0767			0.0000			0.0000
Off-Road	1.8294	18.0003	10.2890	0.0179		0.9742	0.9742		0.9146	0.9146	0.0000	1,745.6360	1,745.6360	0.4065		1,755.7986
<b>Total</b>	<b>1.8294</b>	<b>18.0003</b>	<b>10.2890</b>	<b>0.0179</b>	<b>0.5062</b>	<b>0.9742</b>	<b>1.4805</b>	<b>0.0767</b>	<b>0.9146</b>	<b>0.9913</b>	<b>0.0000</b>	<b>1,745.6360</b>	<b>1,745.6360</b>	<b>0.4065</b>		<b>1,755.7986</b>

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**3.2 Demolition - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0354	1.5482	0.2167	4.5000e-003	0.1050	5.6400e-003	0.1106	0.0288	5.3900e-003	0.0342		477.4537	477.4537	0.0333		478.2864
Vendor	6.9900e-003	0.2272	0.0496	5.1000e-004	0.0128	1.7500e-003	0.0146	3.6900e-003	1.6700e-003	5.3600e-003		53.3877	53.3877	4.9300e-003		53.5110
Worker	0.0430	0.0280	0.2880	8.2000e-004	0.0894	5.5000e-004	0.0900	0.0237	5.1000e-004	0.0242		81.6414	81.6414	2.2200e-003		81.6968
<b>Total</b>	<b>0.0855</b>	<b>1.8033</b>	<b>0.5543</b>	<b>5.8300e-003</b>	<b>0.2072</b>	<b>7.9400e-003</b>	<b>0.2151</b>	<b>0.0562</b>	<b>7.5700e-003</b>	<b>0.0638</b>		<b>612.4828</b>	<b>612.4828</b>	<b>0.0405</b>		<b>613.4941</b>

**3.3 Grading - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.2712	0.0000	6.2712	3.3381	0.0000	3.3381			0.0000			0.0000
Off-Road	2.0622	20.3377	12.5917	0.0210		1.1303	1.1303		1.0582	1.0582		2,053.1779	2,053.1779	0.5038		2,065.7730
<b>Total</b>	<b>2.0622</b>	<b>20.3377</b>	<b>12.5917</b>	<b>0.0210</b>	<b>6.2712</b>	<b>1.1303</b>	<b>7.4015</b>	<b>3.3381</b>	<b>1.0582</b>	<b>4.3963</b>		<b>2,053.1779</b>	<b>2,053.1779</b>	<b>0.5038</b>		<b>2,065.7730</b>

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**3.3 Grading - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1274	5.5662	0.7791	0.0162	0.3774	0.0203	0.3977	0.1035	0.0194	0.1229		1,716.5598	1,716.5598	0.1197		1,719.5534
Vendor	6.9900e-003	0.2272	0.0496	5.1000e-004	0.0128	1.7500e-003	0.0146	3.6900e-003	1.6700e-003	5.3600e-003		53.3877	53.3877	4.9300e-003		53.5110
Worker	0.0538	0.0350	0.3601	1.0200e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		102.0517	102.0517	2.7700e-003		102.1209
<b>Total</b>	<b>0.1882</b>	<b>5.8283</b>	<b>1.1887</b>	<b>0.0177</b>	<b>0.5020</b>	<b>0.0227</b>	<b>0.5247</b>	<b>0.1368</b>	<b>0.0217</b>	<b>0.1585</b>		<b>1,871.9993</b>	<b>1,871.9993</b>	<b>0.1274</b>		<b>1,875.1853</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.4458	0.0000	2.4458	1.3019	0.0000	1.3019			0.0000			0.0000
Off-Road	2.0622	20.3377	12.5917	0.0210		1.1303	1.1303		1.0582	1.0582	0.0000	2,053.1779	2,053.1779	0.5038		2,065.7730
<b>Total</b>	<b>2.0622</b>	<b>20.3377</b>	<b>12.5917</b>	<b>0.0210</b>	<b>2.4458</b>	<b>1.1303</b>	<b>3.5760</b>	<b>1.3019</b>	<b>1.0582</b>	<b>2.3600</b>	<b>0.0000</b>	<b>2,053.1779</b>	<b>2,053.1779</b>	<b>0.5038</b>		<b>2,065.7730</b>

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**3.3 Grading - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.1274	5.5662	0.7791	0.0162	0.3774	0.0203	0.3977	0.1035	0.0194	0.1229		1,716.5598	1,716.5598	0.1197		1,719.5534
Vendor	6.9900e-003	0.2272	0.0496	5.1000e-004	0.0128	1.7500e-003	0.0146	3.6900e-003	1.6700e-003	5.3600e-003		53.3877	53.3877	4.9300e-003		53.5110
Worker	0.0538	0.0350	0.3601	1.0200e-003	0.1118	6.9000e-004	0.1125	0.0296	6.4000e-004	0.0303		102.0517	102.0517	2.7700e-003		102.1209
<b>Total</b>	<b>0.1882</b>	<b>5.8283</b>	<b>1.1887</b>	<b>0.0177</b>	<b>0.5020</b>	<b>0.0227</b>	<b>0.5247</b>	<b>0.1368</b>	<b>0.0217</b>	<b>0.1585</b>		<b>1,871.9993</b>	<b>1,871.9993</b>	<b>0.1274</b>		<b>1,875.1853</b>

**3.4 Building Construction - 2019**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250		1,488.9351	1,488.9351	0.4711		1,500.7122
<b>Total</b>	<b>1.2895</b>	<b>13.5384</b>	<b>9.2868</b>	<b>0.0150</b>		<b>0.7880</b>	<b>0.7880</b>		<b>0.7250</b>	<b>0.7250</b>		<b>1,488.9351</b>	<b>1,488.9351</b>	<b>0.4711</b>		<b>1,500.7122</b>

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**3.4 Building Construction - 2019**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0315	1.0222	0.2232	2.2800e-003	0.0576	7.8800e-003	0.0655	0.0166	7.5400e-003	0.0241		240.2448	240.2448	0.0222		240.7994
Worker	0.1022	0.0665	0.6841	1.9500e-003	0.2124	1.3100e-003	0.2137	0.0563	1.2100e-003	0.0575		193.8983	193.8983	5.2600e-003		194.0298
<b>Total</b>	<b>0.1337</b>	<b>1.0886</b>	<b>0.9073</b>	<b>4.2300e-003</b>	<b>0.2700</b>	<b>9.1900e-003</b>	<b>0.2792</b>	<b>0.0729</b>	<b>8.7500e-003</b>	<b>0.0817</b>		<b>434.1430</b>	<b>434.1430</b>	<b>0.0274</b>		<b>434.8292</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.2895	13.5384	9.2868	0.0150		0.7880	0.7880		0.7250	0.7250	0.0000	1,488.9351	1,488.9351	0.4711		1,500.7122
<b>Total</b>	<b>1.2895</b>	<b>13.5384</b>	<b>9.2868</b>	<b>0.0150</b>		<b>0.7880</b>	<b>0.7880</b>		<b>0.7250</b>	<b>0.7250</b>	<b>0.0000</b>	<b>1,488.9351</b>	<b>1,488.9351</b>	<b>0.4711</b>		<b>1,500.7122</b>

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**3.4 Building Construction - 2019**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0315	1.0222	0.2232	2.2800e-003	0.0576	7.8800e-003	0.0655	0.0166	7.5400e-003	0.0241		240.2448	240.2448	0.0222		240.7994
Worker	0.1022	0.0665	0.6841	1.9500e-003	0.2124	1.3100e-003	0.2137	0.0563	1.2100e-003	0.0575		193.8983	193.8983	5.2600e-003		194.0298
<b>Total</b>	<b>0.1337</b>	<b>1.0886</b>	<b>0.9073</b>	<b>4.2300e-003</b>	<b>0.2700</b>	<b>9.1900e-003</b>	<b>0.2792</b>	<b>0.0729</b>	<b>8.7500e-003</b>	<b>0.0817</b>		<b>434.1430</b>	<b>434.1430</b>	<b>0.0274</b>		<b>434.8292</b>

**3.4 Building Construction - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273		1,456.3883	1,456.3883	0.4710		1,468.1640
<b>Total</b>	<b>1.1604</b>	<b>12.1968</b>	<b>9.0353</b>	<b>0.0150</b>		<b>0.6818</b>	<b>0.6818</b>		<b>0.6273</b>	<b>0.6273</b>		<b>1,456.3883</b>	<b>1,456.3883</b>	<b>0.4710</b>		<b>1,468.1640</b>

UCR PGE-1 - Riverside-South Coast County, Winter

**3.4 Building Construction - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0265	0.9212	0.1984	2.2600e-003	0.0576	5.3300e-003	0.0630	0.0166	5.1000e-003	0.0217		238.5385	238.5385	0.0207		239.0557
Worker	0.0947	0.0592	0.6197	1.8800e-003	0.2124	1.2900e-003	0.2137	0.0563	1.1800e-003	0.0575		187.7648	187.7648	4.6600e-003		187.8814
<b>Total</b>	<b>0.1212</b>	<b>0.9803</b>	<b>0.8181</b>	<b>4.1400e-003</b>	<b>0.2700</b>	<b>6.6200e-003</b>	<b>0.2766</b>	<b>0.0729</b>	<b>6.2800e-003</b>	<b>0.0792</b>		<b>426.3033</b>	<b>426.3033</b>	<b>0.0254</b>		<b>426.9370</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1604	12.1968	9.0353	0.0150		0.6818	0.6818		0.6273	0.6273	0.0000	1,456.3883	1,456.3883	0.4710		1,468.1639
<b>Total</b>	<b>1.1604</b>	<b>12.1968</b>	<b>9.0353</b>	<b>0.0150</b>		<b>0.6818</b>	<b>0.6818</b>		<b>0.6273</b>	<b>0.6273</b>	<b>0.0000</b>	<b>1,456.3883</b>	<b>1,456.3883</b>	<b>0.4710</b>		<b>1,468.1639</b>

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**3.4 Building Construction - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0265	0.9212	0.1984	2.2600e-003	0.0576	5.3300e-003	0.0630	0.0166	5.1000e-003	0.0217		238.5385	238.5385	0.0207		239.0557
Worker	0.0947	0.0592	0.6197	1.8800e-003	0.2124	1.2900e-003	0.2137	0.0563	1.1800e-003	0.0575		187.7648	187.7648	4.6600e-003		187.8814
<b>Total</b>	<b>0.1212</b>	<b>0.9803</b>	<b>0.8181</b>	<b>4.1400e-003</b>	<b>0.2700</b>	<b>6.6200e-003</b>	<b>0.2766</b>	<b>0.0729</b>	<b>6.2800e-003</b>	<b>0.0792</b>		<b>426.3033</b>	<b>426.3033</b>	<b>0.0254</b>		<b>426.9370</b>

**3.5 Paving - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8601	7.8004	7.9413	0.0127		0.4302	0.4302		0.4003	0.4003		1,151.4284	1,151.4284	0.3280		1,159.6289
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8601</b>	<b>7.8004</b>	<b>7.9413</b>	<b>0.0127</b>		<b>0.4302</b>	<b>0.4302</b>		<b>0.4003</b>	<b>0.4003</b>		<b>1,151.4284</b>	<b>1,151.4284</b>	<b>0.3280</b>		<b>1,159.6289</b>

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**3.5 Paving - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0128	1.1800e-003	0.0140	3.6900e-003	1.1300e-003	4.8200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.0897	0.0560	0.5871	1.7900e-003	0.2012	1.2200e-003	0.2024	0.0534	1.1200e-003	0.0545		177.8824	177.8824	4.4200e-003		177.9929
<b>Total</b>	<b>0.0956</b>	<b>0.2608</b>	<b>0.6312</b>	<b>2.2900e-003</b>	<b>0.2140</b>	<b>2.4000e-003</b>	<b>0.2164</b>	<b>0.0571</b>	<b>2.2500e-003</b>	<b>0.0593</b>		<b>230.8910</b>	<b>230.8910</b>	<b>9.0200e-003</b>		<b>231.1164</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.8601	7.8004	7.9413	0.0127		0.4302	0.4302		0.4003	0.4003	0.0000	1,151.4284	1,151.4284	0.3280		1,159.6289
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
<b>Total</b>	<b>0.8601</b>	<b>7.8004</b>	<b>7.9413</b>	<b>0.0127</b>		<b>0.4302</b>	<b>0.4302</b>		<b>0.4003</b>	<b>0.4003</b>	<b>0.0000</b>	<b>1,151.4284</b>	<b>1,151.4284</b>	<b>0.3280</b>		<b>1,159.6289</b>

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**3.5 Paving - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.8800e-003	0.2047	0.0441	5.0000e-004	0.0128	1.1800e-003	0.0140	3.6900e-003	1.1300e-003	4.8200e-003		53.0086	53.0086	4.6000e-003		53.1235
Worker	0.0897	0.0560	0.5871	1.7900e-003	0.2012	1.2200e-003	0.2024	0.0534	1.1200e-003	0.0545		177.8824	177.8824	4.4200e-003		177.9929
<b>Total</b>	<b>0.0956</b>	<b>0.2608</b>	<b>0.6312</b>	<b>2.2900e-003</b>	<b>0.2140</b>	<b>2.4000e-003</b>	<b>0.2164</b>	<b>0.0571</b>	<b>2.2500e-003</b>	<b>0.0593</b>		<b>230.8910</b>	<b>230.8910</b>	<b>9.0200e-003</b>		<b>231.1164</b>

**3.6 Architectural Coating - 2020**

**Unmitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	44.6078					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
<b>Total</b>	<b>44.6078</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

UCR PGE-1 - Riverside-South Coast County, Winter

**3.6 Architectural Coating - 2020**

**Unmitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0199	0.0125	0.1305	4.0000e-004	0.0447	2.7000e-004	0.0450	0.0119	2.5000e-004	0.0121		39.5294	39.5294	9.8000e-004		39.5540
<b>Total</b>	<b>0.0199</b>	<b>0.0125</b>	<b>0.1305</b>	<b>4.0000e-004</b>	<b>0.0447</b>	<b>2.7000e-004</b>	<b>0.0450</b>	<b>0.0119</b>	<b>2.5000e-004</b>	<b>0.0121</b>		<b>39.5294</b>	<b>39.5294</b>	<b>9.8000e-004</b>		<b>39.5540</b>

**Mitigated Construction On-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	44.6078					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
<b>Total</b>	<b>44.6078</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>	<b>0.0000</b>		<b>0.0000</b>

UCR PGE-1 - Riverside-South Coast County, Winter

**3.6 Architectural Coating - 2020**

**Mitigated Construction Off-Site**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0199	0.0125	0.1305	4.0000e-004	0.0447	2.7000e-004	0.0450	0.0119	2.5000e-004	0.0121		39.5294	39.5294	9.8000e-004		39.5540
<b>Total</b>	<b>0.0199</b>	<b>0.0125</b>	<b>0.1305</b>	<b>4.0000e-004</b>	<b>0.0447</b>	<b>2.7000e-004</b>	<b>0.0450</b>	<b>0.0119</b>	<b>2.5000e-004</b>	<b>0.0121</b>		<b>39.5294</b>	<b>39.5294</b>	<b>9.8000e-004</b>		<b>39.5540</b>

**4.0 Operational Detail - Mobile**

---

**4.1 Mitigation Measures Mobile**

UCR PGE-1 - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0769	0.6565	0.9765	4.0800e-003	0.3167	3.9900e-003	0.3207	0.0847	3.7600e-003	0.0885		416.5515	416.5515	0.0221		417.1041
Unmitigated	0.0769	0.6565	0.9765	4.0800e-003	0.3167	3.9900e-003	0.3207	0.0847	3.7600e-003	0.0885		416.5515	416.5515	0.0221		417.1041

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Office Building	39.90	39.90	39.90	148,471	148,471
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	39.90	39.90	39.90	148,471	148,471

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Office Building	16.60	8.40	6.90	50.00	50.00	0.00	77	19	4
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Office Building	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120
Other Non-Asphalt Surfaces	0.538064	0.038449	0.184390	0.122109	0.017402	0.005339	0.017250	0.067711	0.001365	0.001213	0.004629	0.000959	0.001120

UCR PGE-1 - Riverside-South Coast County, Winter

**5.0 Energy Detail**

---

Historical Energy Use: N

**5.1 Mitigation Measures Energy**

---

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
NaturalGas Unmitigated	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538

UCR PGE-1 - Riverside-South Coast County, Winter

**5.2 Energy by Land Use - NaturalGas**

**Unmitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	361.26	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>3.9000e-003</b>	<b>0.0354</b>	<b>0.0298</b>	<b>2.1000e-004</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>42.5012</b>	<b>42.5012</b>	<b>8.1000e-004</b>	<b>7.8000e-004</b>	<b>42.7538</b>

**Mitigated**

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Office Building	0.36126	3.9000e-003	0.0354	0.0298	2.1000e-004		2.6900e-003	2.6900e-003		2.6900e-003	2.6900e-003		42.5012	42.5012	8.1000e-004	7.8000e-004	42.7538
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
<b>Total</b>		<b>3.9000e-003</b>	<b>0.0354</b>	<b>0.0298</b>	<b>2.1000e-004</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>2.6900e-003</b>	<b>2.6900e-003</b>		<b>42.5012</b>	<b>42.5012</b>	<b>8.1000e-004</b>	<b>7.8000e-004</b>	<b>42.7538</b>

**6.0 Area Detail**

**6.1 Mitigation Measures Area**

UCR PGE-1 - Riverside-South Coast County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
Unmitigated	0.8564	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0978					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.7583					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.7000e-004	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
<b>Total</b>	<b>0.8564</b>	<b>4.0000e-005</b>	<b>3.9400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>8.4000e-003</b>	<b>8.4000e-003</b>	<b>2.0000e-005</b>		<b>8.9600e-003</b>

UCR PGE-1 - Riverside-South Coast County, Winter

**6.2 Area by SubCategory**

**Mitigated**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.0978					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.7583					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.7000e-004	4.0000e-005	3.9400e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.4000e-003	8.4000e-003	2.0000e-005		8.9600e-003
<b>Total</b>	<b>0.8564</b>	<b>4.0000e-005</b>	<b>3.9400e-003</b>	<b>0.0000</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>1.0000e-005</b>	<b>1.0000e-005</b>		<b>8.4000e-003</b>	<b>8.4000e-003</b>	<b>2.0000e-005</b>		<b>8.9600e-003</b>

**7.0 Water Detail**

**7.1 Mitigation Measures Water**

**8.0 Waste Detail**

**8.1 Mitigation Measures Waste**

Institute Recycling and Composting Services

**9.0 Operational Offroad**

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

**10.0 Stationary Equipment**

UCR PGE-1 - Riverside-South Coast County, Winter

**Fire Pumps and Emergency Generators**

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

**Boilers**

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

**User Defined Equipment**

Equipment Type	Number
----------------	--------

**11.0 Vegetation**

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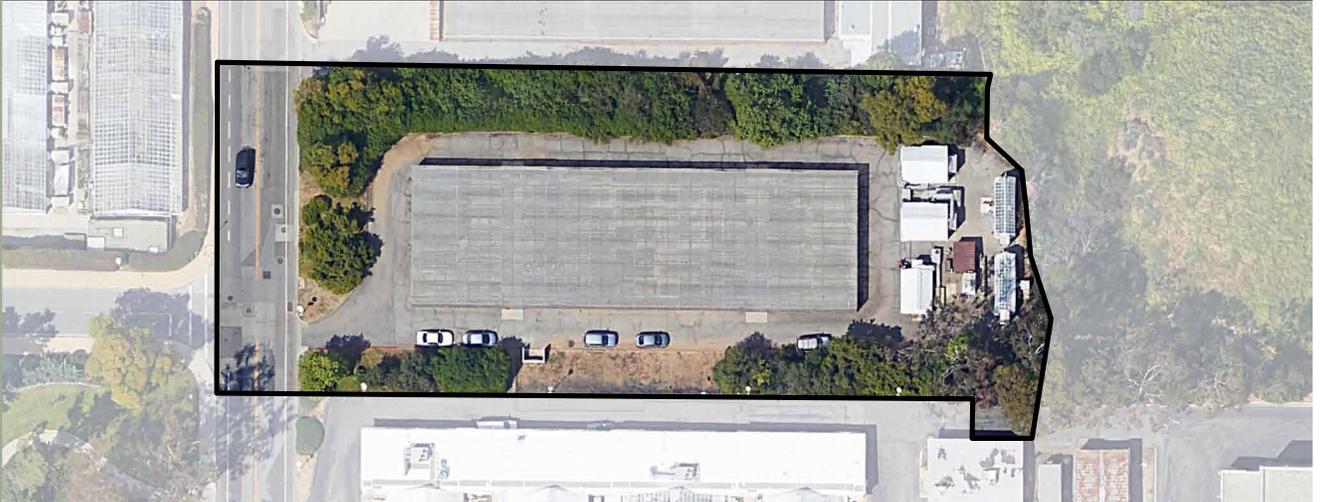
**Appendix B**  
**Biological Resources Technical Report**

# Biological Resources Technical Report

## Plant Growth Environmental Facility Project

*University of California Riverside*

### FINAL REPORT



#### ***Prepared for:***

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**February 2019**

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## INTRODUCTION

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The following biological resources technical report describes a detailed assessment of potential sensitive natural resources located within and/or immediately adjacent (approximately 50 feet) to the University of California Riverside (UCR) Plant Growth Environmental Facility project site (Project Site). The report has been prepared to support compliance with the California Environmental Quality Act (CEQA) documentation including the preparation of an Initial Study/Mitigated Negative Declaration (IS/MND) to be reviewed and approved by the University of California (UC) Board of Regents (The Regents). As discussed below, the assessment included a thorough literature review, site reconnaissance characterizing existing conditions (including floral, faunal and dominant vegetation communities), impact analysis, applicable standards and regulations to ensure impacts remain at a level below significance. The assessment also included a review of the biological resources analysis and mitigation measures outlined in the University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report (referred to hereinafter as the 2005 LRDP EIR) and the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report (referred to hereinafter as the 2005 LRDP Amendment 2 EIR) (collectively referred to as the “LRDP EIR”).

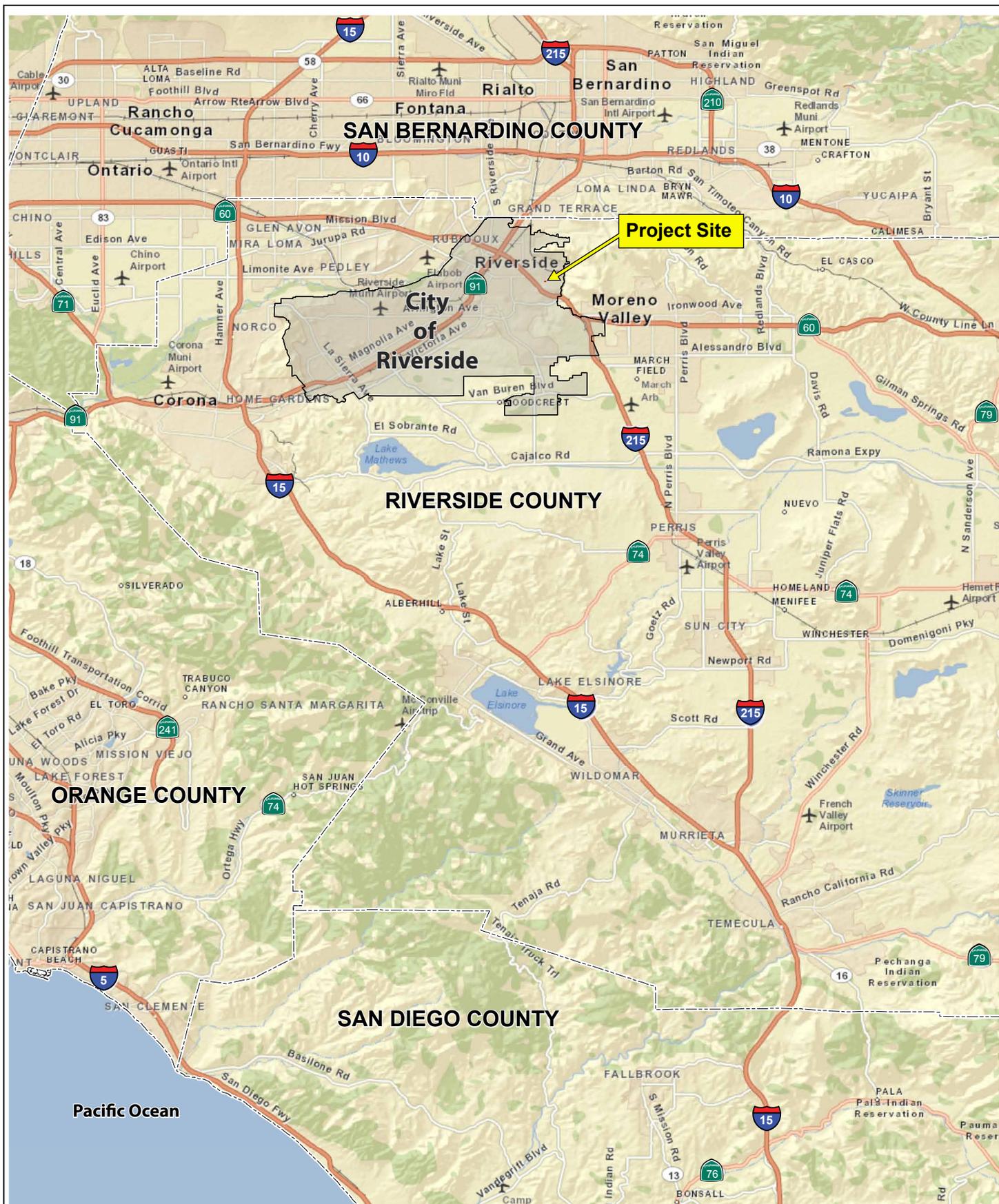
### PROJECT LOCATION

The approximately 1.25-acre (54,450 square feet (sf)) Project Site (partially within APN 253-100-005) is located within the UCR campus, City of Riverside, Riverside County, California as shown on Figure 1, *Regional Location Map*. Specifically, the Project Site is located east of the East Campus Drive/Eucalyptus Drive intersection, south of the existing Lath House #3, and north of the existing Greenhouses #18-21 site as shown on Figure 2, *Project Site Vicinity Map*. A total of three (3) temporary construction laydown areas ranging in size from approximately 0.10 acre to 0.33 acre have been identified for a construction trailer, parking, and storage. All temporary construction laydown areas land uses are designated as “Academic” and include existing disturbed (paved) areas or disturbed habitats devoid of vegetation as shown in Figure 3, *Temporary Construction Laydown Areas Map*.

### PROJECT DESCRIPTION

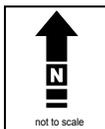
The Project Site is currently developed with Lath House B, four plant growth glasses houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet. The proposed Project would involve the demolition of all the facilities on site, removal of existing landscape along the northern, southern, and western portion of the site, and removal of associated pavement for the construction of a 2-story, approximately 38,000 square foot Plant Growth Environment Facility (PGEF), one Americans with Disabilities (ADA) accessible parking space, a hammerhead driveway, and associated on-site improvements (Figure 4, *Project Site Plan*). There are no off-campus modifications associated with the proposed Project.

The Project Site’s land use is designated as “Academic” as shown on Figure 2, *Project Site Vicinity Map* (UCR 2005 LRDP Amendment 2 – Figure 13a).



Central Portion of APN 253-100-005

**Figure 1 - Regional Location Map**  
*Biological Resources Technical Report*  
*Plant Growth Environmental Facility Project, UCR*





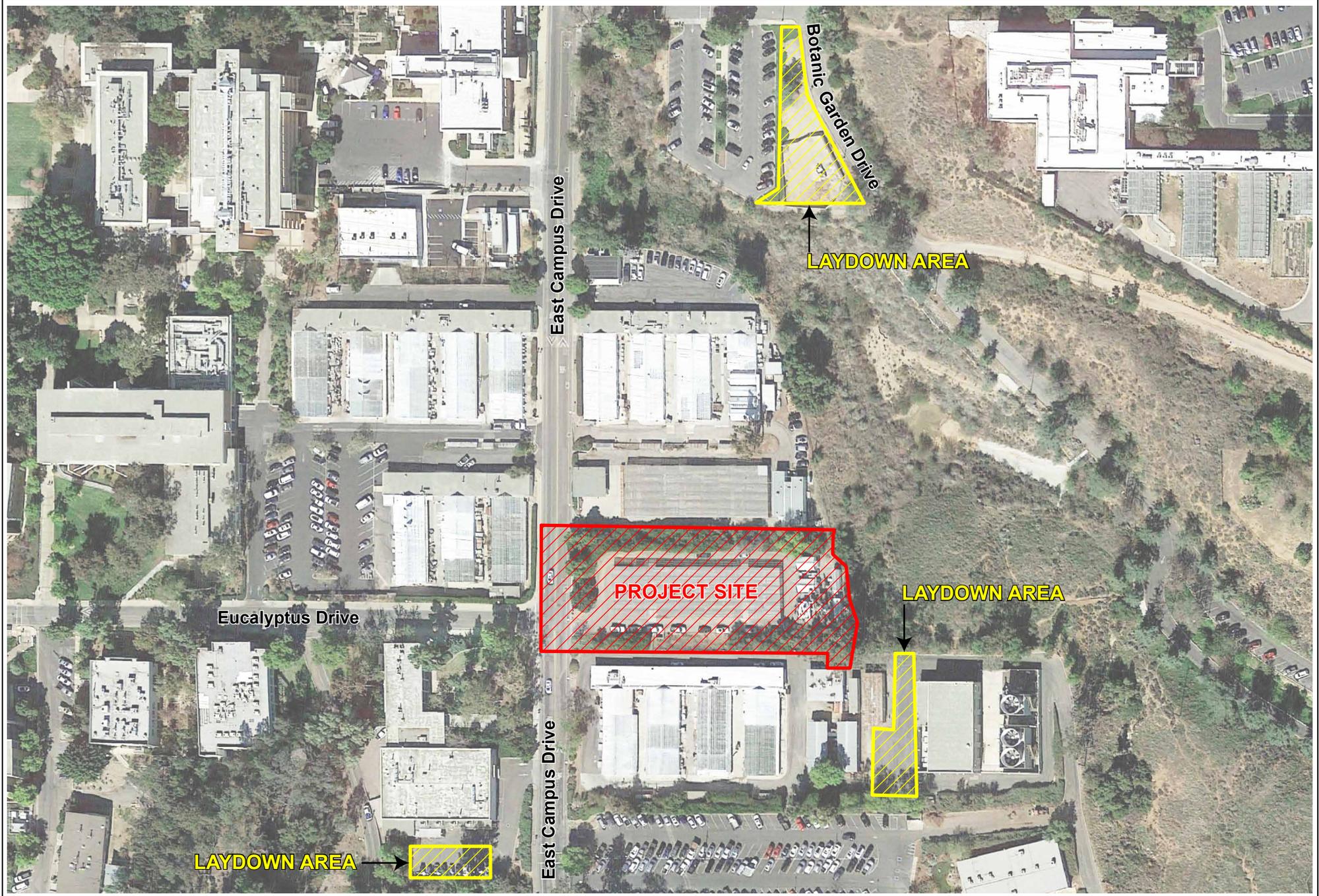
Central Portion of APN 253-100-005

## Figure 2 - Project Site Vicinity Map

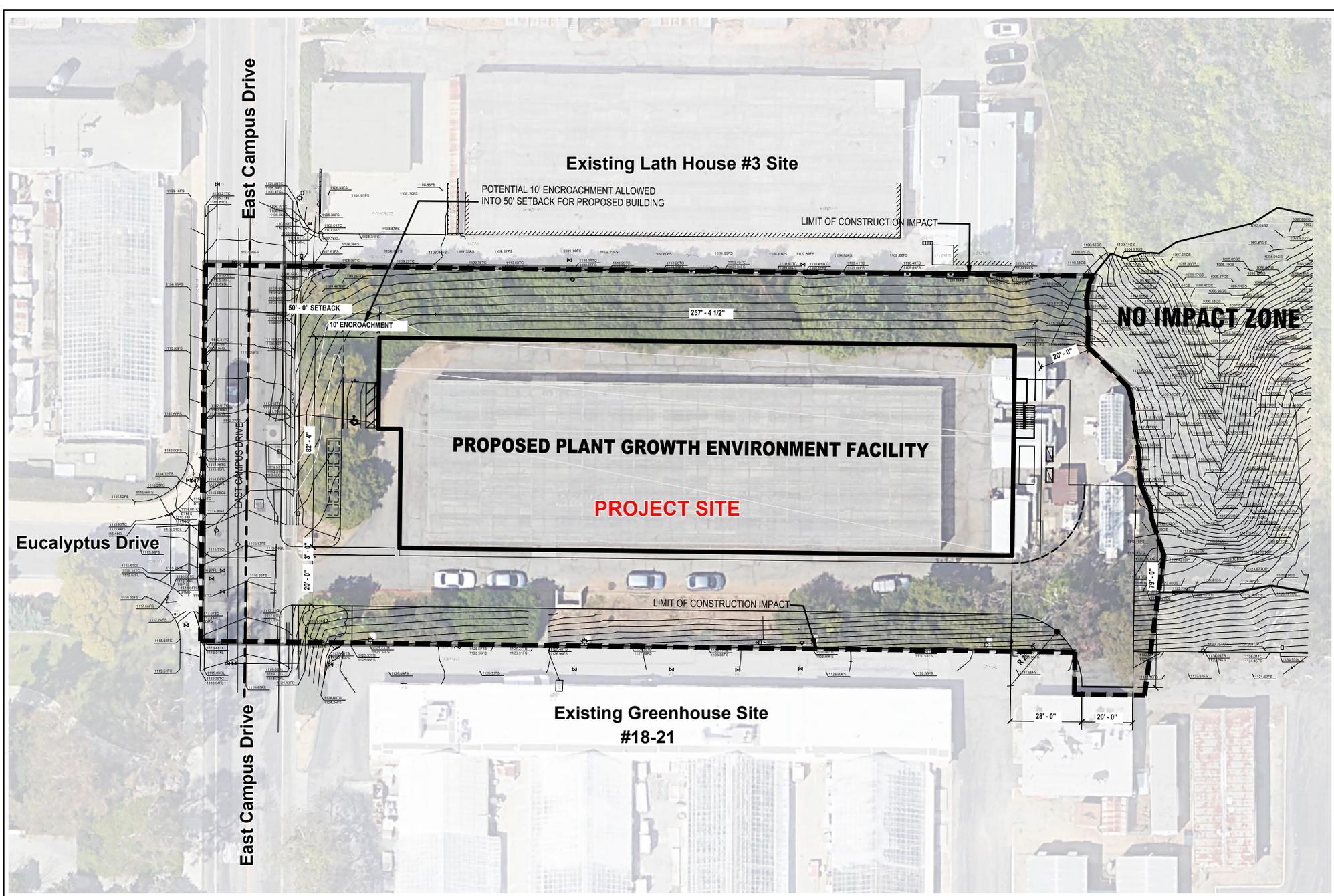
Biological Resources Technical Report  
Plant Growth Environmental Facility Project, UCR



1 inch = 50 ft.

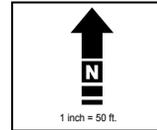


**Figure 3 - Temporary Construction Laydown Areas Map**  
 Biological Resources Technical Report  
 Plant Growth Environmental Facility Project, UCR



**Figure 4 - Project Site Plan Map**

Biological Resources Technical Report  
 Plant Growth Environmental Facility Project, UCR



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## METHODOLOGY

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The following section details the methods implemented prior to and during the reconnaissance survey conducted throughout the Project Site.

### LITERATURE REVIEW

Existing biological resource conditions within and adjacent to the Project Site were initially investigated through review of pertinent scientific literature. Federal register listings, protocols, and species data provided by the United States Fish and Wildlife Service (USFWS) were also reviewed in conjunction with anticipated federally listed species potentially occurring within the region of the Project Site. The California Natural Diversity Database (CNDDDB) (CDFW 2018a), a California Department of Fish and Wildlife (CDFW) Natural Heritage Division species account database, was also reviewed for all pertinent information regarding the locations of known occurrences of sensitive species in the vicinity of the property. In addition, numerous regional floral and faunal field guides were utilized in the identification of species and suitable habitats. Combined, the reviewed sources provided an excellent baseline from which to inventory the biological resources potentially occurring in the area. Other CDFW reports and publications consulted include the following:

- Special Animals (CDFW 2018b);
- State and Federally Listed Endangered and Threatened Animals of California (CDFW 2018c);
- Endangered, Threatened, and Rare Plants of California (CDFW 2018d); and
- Special Vascular Plants and Bryophytes List (CDFW 2018e).

### UNIVERSITY OF CALIFORNIA, RIVERSIDE 2005 LONG RANGE DEVELOPMENT PLAN ENVIRONMENTAL IMPACT REPORT MITIGATION REVIEW

A review of all biological mitigation measures outlined in the University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report were reviewed to determine which if any are applicable to the proposed Project (UCR 2005).

### FIELD SURVEY

A reconnaissance survey of the Project Site was conducted by Ruben Ramirez of Cadre Environmental (USFWS Permit 780566-14, CDFW Permit 02243) on May 2<sup>nd</sup>, 2018 in order to characterize and identify potential sensitive plant and wildlife habitats, and to establish the accuracy of the data identified in the literature search. Geologic and soil maps were examined to identify local soil types that may support sensitive taxa. Aerial photograph, topographic maps, vegetation and rare plant maps prepared for previous studies in the region were used to determine community types and other physical features that may support sensitive plants/wildlife, uncommon taxa, or rare communities that occur within or adjacent to the Project Site. Habitat assessments were conducted for, but not limited to, the following target species/groups.

- Coastal California gnatcatcher – FT/SSC
- Burrowing owl - SSC

- Least Bell's vireo – FE/SE
- Southwestern willow flycatcher – FE/SE
- Western yellow-billed cuckoo – FT/SE
- San Bernardino kangaroo rat – FE/SSC
- Sensitive plants

### **Vegetation Communities/Habitat Classification Mapping**

Natural community names and hierarchical structure follows the “*Manual of California Vegetation*” (Sayer and Keeler-Wolf 2009) classification system, which has been refined and augmented where appropriate to better characterize the habitat types observed onsite.

### **Floristic Plant Inventory**

A general plant survey was conducted throughout the Project Site during the reconnaissance in a collective effort to identify all species occurring onsite.

All plants observed during the survey efforts were either identified in the field or collected and later identified using taxonomic keys. Plant taxonomy follows Hickman (1993). Scientific nomenclature and common names used in this report generally follow Roberts et al. (2004) or Baldwin et al. (2012) for updated taxonomy. Scientific names are included only at the first mention of a species; thereafter, common names alone are used.

### **Wildlife Resources Inventory**

All animals identified during the reconnaissance survey by sight, call, tracks, scat, or other characteristic sign were documented. In addition to species actually detected, expected use of the site by other wildlife was derived from the analysis of habitats on the site, combined with known habitat preferences of regionally occurring wildlife species.

Vertebrate taxonomy followed in this report is according to the Center for North American Herpetology (2018 for amphibians and reptiles), the American Ornithologists' Union (1988 and supplemental) for birds, and Baker et al. (2003) for mammals. Both common and scientific names are used during the first mention of a species; common names only are used in the remainder of the text.

### **Jurisdictional Resources Assessment**

The Project Site was assessed for jurisdiction by the United States Army Corps of Engineers (USACE), CDFW, and Regional Water Quality Control Board (RWQCB). Non-wetland waters of the United States were assessed based on the limits of the Ordinary High-Water Mark (OHWM) as determined by erosion, the deposition of vegetation or debris, and changes in vegetation and soil characteristics. The assessment utilized the methodology for routine wetland determination according to the methods outlined in the USACE Wetland Delineation Manual (Environmental Laboratory 1987) and the Arid West Wetland Delineation Supplement and updated regulatory guidance letters (USACE 2008). Wetlands are identified by the presence of three characteristics: hydrophytic vegetation, wetland hydrology, and hydric soils. If any of these criteria were met, one or

more transects were run to determine the extent of the wetland. Specifically, the presence of wetland hydrology was evaluated throughout the Project Site by recording the extent of observed surface flows, depth of inundation, depth to saturated soils, and depth to free water in the soil pits, where applicable. In addition, indicators of wetland or riverine hydrology were recorded, including water marks, drift lines, rack, debris, and sediment deposits, as warranted. Any indicators of hydric soils, such as redoximorphic features, buried organic matter, organic streaking, reduced soil conditions, gleyed or low-chroma soils, or sulfidic odor were also recorded.

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## EXISTING ENVIRONMENTAL SETTING

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The following section presents the existing conditions of the Project Site assessment area. Substrates onsite are characterized as somewhat poorly drained Buren fine sandy loam (BuC2) and Terrace escarpments (TeG), (USDA 2018).

### VEGETATION COMMUNITIES

The approximately 1.25-acre Project Site is dominated by developed, disturbed, and ornamental/exotic vegetation communities as described in this report, and illustrated on Figure 5, *Vegetation Communities Map*, and Figures 6 and 7, *Current Project Site Photographs*. Natural community names and hierarchical structure follows the “*Manual of California Vegetation*” (Sayer and Keeler-Wolf 2009) classification system, which has been refined and augmented where appropriate to better characterize the habitat types observed.

The Project Site is in an area designated as “Academic” in the 2005 LRDP Amendment 2 Land Use Plan which allows for the development of the proposed Project. However, the 2005 LRDP Amendment 2 defines this area in the Open Space Framework as “Naturalistic Open Space” and provides guidance on the character of the landscape in these areas. Open Space designation is located immediately east of the Project Site where an unnamed drainage flow line is located approximately 54 feet east of the Project Site. The unnamed drainage is dominated by non-native grassland vegetation, whose flow line drains approximately 170 feet northeast of the Project Site into the Botanic Garden Detention Basin (Detention Basin) as shown on Figure 2, *Project Site Vicinity Map*. The proposed project will avoid the Open Space area east of the Project Site noted as “No Impact Zone” on Figure 4, *Project Site Plan Map*. As indicated below, no undeveloped or native vegetation is located within the Project Site boundary or temporary construction laydown areas.

#### Developed

The 0.81-acre developed region of the Project Site includes the existing lath house, plant growth structures, temporary compost toilet, metal shed, paved access roads and parking areas. A total of three (3) temporary construction laydown areas (approximately 0.48-acre) have been identified for a construction trailer, parking, and storage. All temporary construction laydown areas include existing disturbed (paved) areas or disturbed habitats devoid of vegetation as shown in Figure 3, *Temporary Construction Laydown Areas Map*.

## Ornamental/Exotic

The perimeter of the Project Site is dominated by 0.40-acre of ornamental landscaped/exotic shrubs and trees. Species documented onsite include but are not limited to Eucalyptus (*Eucalyptus* sp.), Peruvian pepper trees (*Schinus molle*), Brazilian pepper trees (*Schinus terebinthifolia*), simple-leaved pepper tree (*Schinus polygamus*), cape honeysuckle (*Tecomaria capensis*), common fig (*Ficus palmata*), lantana (*Lantana camara*), blue plumbago (*Plumbago auriculata*), and baby sun rose (*Aptenia cordifolia*).

## Disturbed

A small 0.04-acre patch of disturbed vegetation is located adjacent to the southern Project Site boundary. This vegetation community is generally devoid of vegetation with the exception of scattered ruderal non-native plant species documented onsite including London rockets (*Sisymbrium irio*), horehound (*Marrubium vulgare*), common sow thistle (*Sonchus oleraceus*), tree tobacco (*Nicotiana glauca*), and non-native grasses.

The ornamental vegetation including, trees and shrubs within and immediately adjacent to the Project Site are expected to potentially provide nesting habitat for common and migratory birds and raptors protected under the federal Migratory Bird Treaty Act (MBTA). The loss of an active nest would be considered a potentially significant impact. Standard required compliance with the MBTA will ensure potential impacts to migratory birds are reduced to a level below significant.

No riparian, sensitive, or undisturbed native habitats were documented within or immediately adjacent to the Project Site as outlined in Table 1, *Project Site Vegetation Community Acreages*. As previously stated, an unnamed drainage is dominated by non-native grassland vegetation, whose flow line is located approximately 54 feet east of the Project Site and drains approx. 170 feet northeast of the Project Site into a Detention Basin as shown on Figure 2, *Project Site Vicinity Map*.

**Table 1 – Project Site Vegetation Community Acreages**

<b>Vegetation Community</b>	<b>Acres</b>
Developed	0.81
Ornamental/Exotic	0.40
Disturbed	0.04
<b>TOTAL</b>	<b>1.25</b>

Source: Cadre Environmental 2018.

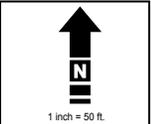
## GENERAL PLANT & WILDIFE SPECIES

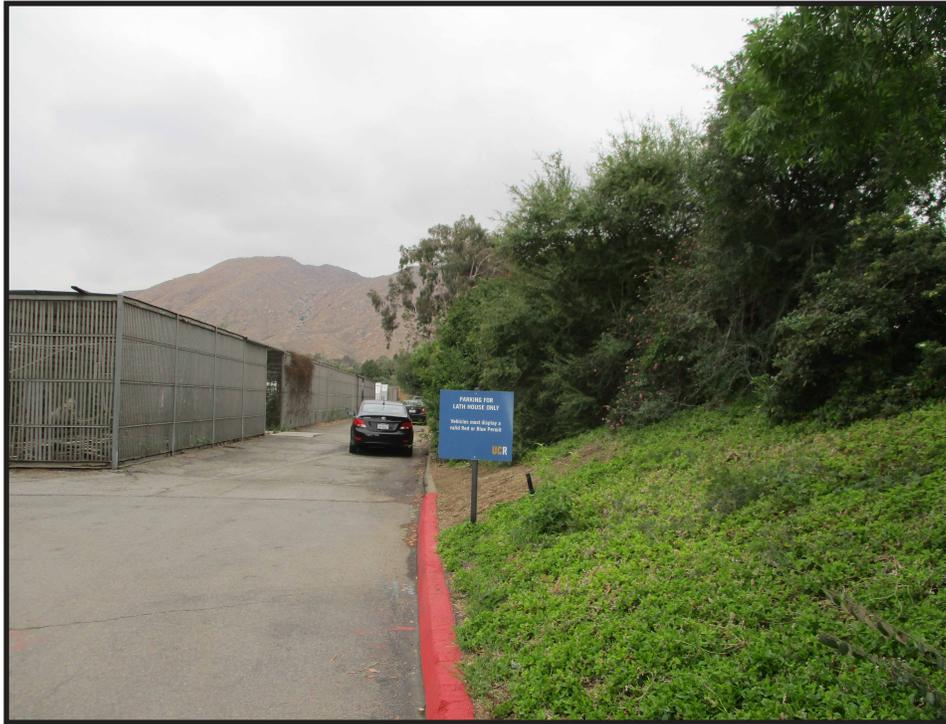
General plant species documented within the Project Site are presented in the previous section. General wildlife species documented onsite or within the vicinity during the site assessment include but are not limited to mourning dove (*Zenaida macroura*), black phoebe (*Sayornis nigricans*), cliff swallow (*Petrochelidon pyrrhonota*), common starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), song sparrow (*Melospiza melodia*), and house finch (*Haemorhous mexicanus*).



**Figure 5 - Vegetation Communities Map**

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PHOTOGRAPH 1 - Eastward view of Project Site from East Campus Drive/Eucalyptus Drive Intersection. The Project Site is bordered by ornamental/exotic landscaping.



PHOTOGRAPH 2 - Southeast view of the existing developed structures located onsite. No native vegetation communities are located within the Project Site.

Refer to Figure 4 for Photographic Key Map

## Figure 6 - Current Project Site Photographs

*Biological Resources Technical Report  
Plant Growth Environmental Facility Project, UCR*



PHOTOGRAPH 3 - Northeast view of the existing developed structures located onsite. No native vegetation communities are located within the Project Site.



PHOTOGRAPH 4 - Westward view of Project Site from offsite drainage dominated by non-native grassland vegetation.

Refer to Figure 4 for Photographic Key Map

## Figure 7 - Current Project Site Photographs

*Biological Resources Technical Report  
Plant Growth Environmental Facility Project, UCR*



## WILDLIFE CORRIDORS

As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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.” (UCR 2005)*

The Project Site does not represent a wildlife corridor, habitat linkage or open space area. The Project Site is bordered to the north, south and west by UCR Campus facilities and roads to the west (East Campus Drive and Eucalyptus Drive).

## JURISDICTIONAL WETLAND RESOURCES

No wetlands or jurisdictional resources regulated by the USACE, CDFW, or RWQCB were documented within or immediately adjacent to the Project Site. As previously stated, an unnamed drainage is located immediately east of the Project Site, whose flow line is located approximately 54 feet east of the Project Site. The unnamed drainage is dominated by non-native grassland vegetation, whose flow line drains approximately 170 feet northeast of the Project Site into a Detention Basin as shown on Figure 2, *Project Site Vicinity Map*. These offsite regulated resources will not be directly or indirectly impacted as a result of project initiation.

Impacts to water quality would be less than significant during both construction and operation. The Project contractor would implement standard best management practices (BMPs) during construction, incorporate landscape features that would capture on-site runoff and prevent discharge to the adjacent open space lands located east of the Project Site. As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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” (UCR 2005)*

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## **SENSITIVE BIOLOGICAL RESOURCES AND POTENTIAL IMPACTS DISCUSSION**

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The following discussion describes the plant and wildlife species present, or potentially present within the property boundaries, that have been afforded special recognition by federal, state, or local resource conservation agencies and organizations, principally due to the species’ declining or limited population sizes, usually resulting from habitat loss. Also discussed are habitats that are unique, of relatively limited distribution, or of particular value to wildlife. Protected sensitive species are classified by state and/or federal resource management agencies, or both, as threatened or endangered, under provisions of the state and federal endangered species act. Vulnerable or “at-risk” species that are proposed for listing as threatened or endangered (and thereby for protected status) are categorized administratively as "candidates" by the USFWS. CDFW uses various terminology and classifications to describe vulnerable species. There are additional sensitive species classifications applicable in California. These are described below.

Sensitive biological resources are habitats or individual species that have special recognition by federal, state, or local conservation agencies and organizations as endangered, threatened, or rare. The CDFW, USFWS, and special groups like the California Native Plant Society (CNPS) maintain watch lists of such resources. For the purpose of this assessment sources used to determine the sensitive status of biological resources are:

**Plants:** USFWS (2018), CNDDDB (CDFW 2018a), CDFW (2018d, 2018e), CNPS (2018), and Skinner and Pavlik (1994).

**Wildlife:** California Wildlife Habitat Relationships (2008), USFWS (2018), CNDDDB (CDFW 2018a), and CDFW (2018b, 2018c).

**Habitats:** CNDDDB (CDFW 2018a), CDFW (2018f).

## **FEDERAL PROTECTION AND CLASSIFICATIONS**

The Federal Endangered Species Act of 1973 (FESA) defines an endangered species as “any species that is in danger of extinction throughout all or a significant portion of its range...” Threatened species are defined as “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Under provisions of Section 9(a)(1)(B) of the FESA it is unlawful to “take” any listed species. “Take” is defined as follows in Section 3(18) of the FESA: “...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any

such conduct.” Further, the USFWS, through regulation, has interpreted the terms “harm” and “harass” to include certain types of habitat modification as forms of a “take.” These interpretations, however, are generally considered and applied on a case-by-case basis and often vary from species to species. In a case where a property owner seeks permission from a federal agency for an action that could affect a federally listed plant and animal species, the property owner and agency are required to consult with USFWS. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants. Recently, the USFWS instituted changes in the listing status of former candidate species. Former C1 (candidate) species are now referred to simply as candidate species and represent the only candidates for listing. Former C2 species (for which the USFWS had insufficient evidence to warrant listing at this time) and C3 species (either extinct, no longer a valid taxon or more abundant than was formerly believed) are no longer considered as candidate species. Therefore, these species are no longer maintained in list form by the USFWS, nor are they formally protected. However, some USFWS field offices have issued memoranda stating that former C2 species are henceforth to be considered Federal Species of Concern. This term is employed in this document but carries no official protections. All references to federally protected species in this report (whether listed, proposed for listing or candidate) include the most current published status or candidate category to which each species has been assigned by USFWS.

For purposes of this assessment, the following acronyms are used for federal status species:

FE	Federal Endangered
FT	Federal Threatened
FPE	Federal Proposed Endangered
FPT	Federal Proposed Threatened
FC	Federal Candidate for Listing

The designation of critical habitat can also have a significant impact on the development of land designated as “*critical habitat*.” The FESA prohibits federal agencies from taking any action that will “*adversely modify or destroy*” critical habitat (16 U.S.C. § 1536(a)(2)). This provision of the FESA applies to the issuance of permits by federal agencies. Before approving an action affecting critical habitat, the federal agency is required to consult with the USFWS who then issues a biological opinion evaluating whether the action will “*adversely modify*” critical habitat. Thus, the designation of critical habitat effectively gives the USFWS extensive regulatory control over the development of land designated as critical habitat.

The Migratory Bird Treaty Act of 1918 (MBTA) makes it unlawful to “*take*” any migratory bird or part, nest, or egg of such bird listed in wildlife protection treaties between the United States and Great Britain, the Republic of Mexico, Japan, and the Union of Soviet States. For purposes of the MBTA, “*take*” is defined as to pursue, hunt, capture, kill, or possess or attempt to do the same.

The Bald Eagle and Golden Eagle Protection Act explicitly protects the bald eagle and golden eagle and imposes its own prohibition on any taking of these species. As defined in this act, take means to pursue, shoot, shoot at, poison, wound, kill, capture, trap,

collect, or molest or disturb. Current USFWS policy is not to refer the incidental take of bald eagles for prosecution under the Bald Eagle and Golden Eagle Protection Act (16 U.S.C. 668-668d).

## **STATE PROTECTION AND CLASSIFICATIONS**

California's Endangered Species Act (CESA) defines an endangered species as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant which is in serious danger of becoming extinct throughout all, or a significant portion, of its range due to one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, or disease." The State defines a threatened species as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future in the absence of the special protection and management efforts required by this chapter. Any animal determined by the commission as rare on or before January 1, 1985 is a threatened species." Candidate species are defined as "...a native species or subspecies of a bird, mammal, fish, amphibian, reptile, or plant that the commission has formally noticed as being under review by the department for addition to either the list of endangered species or the list of threatened species, or a species for which the commission has published a notice of proposed regulation to add the species to either list." Candidate species may be afforded temporary protection as though they were already listed as threatened or endangered at the discretion of the Fish and Game Commission. Unlike FESA, CESA does not include listing provisions for invertebrate species.

Article 3, Sections 2080 through 2085, of CESA addresses the taking of threatened or endangered species by stating "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided..." Under CESA, "take" is defined as "...hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Exceptions authorized by the state to allow "take" require "...permits or memorandums of understanding..." and can be authorized for "...endangered species, threatened species, or candidate species for scientific, educational, or management purposes." Sections 1901 and 1913 of the California Fish and Game Code provide that notification is required prior to disturbance.

Additionally, some sensitive mammals and birds are protected by the State as Fully Protected Mammals or Fully Protected Birds, as described in the California Fish and Game Code, Sections 4700 and 3511, respectively. SSC ("special" animals and plants) listings include special status species, including all state and federal protected and candidate taxa, Bureau of Land Management (BLM) and US Forest Service (USFS) sensitive species, species considered to be declining or rare by the CNPS or National Audubon Society, and a selection of species which are considered to be under population stress but are not formally proposed for listing. This list is primarily a working document for the CDFW's CNDDDB project. Informally listed taxa are not protected per se, but warrant consideration in the preparation of biotic assessments. For some species, the CNDDDB is only concerned with specific portions of the life history, such as roosts, rookeries, or nest sites.

For the purposes of this assessment, the following acronyms are used for State status species:

SE	State Endangered
ST	State Threatened
SCE	State Candidate Endangered
SCT	State Candidate Threatened
SFP	State Fully Protected
SP	State Protected
SR	State Rare
SSC	California Species of Special Concern
CWL	California Watch List

The CNPS is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in the State. This organization has compiled an inventory comprised of the information focusing on geographic distribution and qualitative characterization of rare, threatened, or endangered vascular plant species of California (Tibor 2001). The list serves as the candidate list for listing as threatened and endangered by CDFW. The CNPS has developed five categories of rarity (CRPR):

CRPR 1A	Presumed extinct in California.
CRPR 1B	Rare, threatened, or endangered in California and elsewhere.
CRPR 2	Rare, threatened, or endangered in California, but more common elsewhere.
CRPR 3	Plants about which we need more information – a review list.
CRPR 4	Species of limited distribution in California (i.e., naturally rare in the wild), but whose existence does not appear to be susceptible to threat.

As stated by the CNPS:

*“Threat Rank is an extension added onto the California Rare Plant Rank and designates the level of endangerment by a 1 to 3 ranking with 1 being the most endangered and 3 being the least endangered. A Threat Rank is present for all California Rare Plant Rank 1B's, 2's, 4's, and the majority of California Rare Plant Rank 3's. California Rare Plant Rank 4 plants are seldom assigned a Threat Rank of 0.1, as they generally have large enough populations to not have significant threats to their continued existence in California; however, certain conditions exist to make the plant a species of concern and hence be assigned a California Rare Plant Rank. In addition, all California Rare Plant Rank 1A (presumed extinct in California), and some California Rare Plant Rank 3 (need more information) plants, which lack threat information, do not have a Threat Rank extension.” (CNPS 2018)*

0.1	Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2	Fairly threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3	Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

## LOCAL PROTECTION AND CLASSIFICATIONS

As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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.” (UCR 2005)*

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

As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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 634 and 719 of the MSHCP do include portions of the campus, the plan does not identify any portion of the UCR for conservation.” (UCR 2005)*

The University of California Riverside is not a permittee to the western Riverside County MSHCP and therefore is not afforded the coverage the plan provides. Regardless, the following section summarizes the proposed project respective of MSHCP guidelines and consistency.

### **Criteria Areas**

The Project Site is located within the Western Riverside County MSHCP City of Riverside and Norco Area Plan outside of an area designated by a Criteria Cell.

### **Criteria Area Species Survey Area**

The Project Site does not occur within a predetermined Survey Area for MSHCP criteria area species (RCA GIS Data Downloads 2018).

The project is consistent with MSHCP Section 6.3.2.

### **Narrow Endemic Plant Species Survey Area**

The Project Site does not occur within a predetermined Survey Area for MSHCP narrow endemic plant species (RCA GIS Data Downloads 2018).

The project is consistent with MSHCP Section 6.1.3.

### **Amphibian Species Survey Area**

The Project Site is not located within a predetermined Survey Area for amphibians (RCA GIS Data Downloads 2018).

The project is consistent with MSHCP Section 6.3.2.

### **Mammal Species Survey Area**

The Project Site is not located within a predetermined Survey Area for mammals (RCA GIS Data Downloads 2018).

The project is consistent with MSHCP Section 6.3.2.

### **Burrowing Owl Survey Area**

A small 0.01-acre of the developed eastern region of the Project Site occurs within a predetermined Survey Area for the burrowing owl (*Athene cunicularia*). No burrowing owl burrows, refugia or foraging habitat occur within the Project Site boundary.

The project is consistent with MSHCP Section 6.3.2.

### **Riparian, Riverine and Vernal Pools Areas**

No MSHCP section 6.1.2 regulated riparian, riverine, or vernal pool resources are located within or immediately adjacent to the Project Site. A potential MSHCP riverine resource (unnamed drainage flow line) is located approximately 54 feet east of the Project Site and this region will not be directly or indirectly impacted as a result of project initiation.

No suitable habitat for the least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*) or western yellow-billed cuckoo (*Coccyzus americanus*) was detected within or adjacent to the Project Site.

The project is consistent with MSHCP Section 6.1.2.

### **Urban Wildlands Interface Guidelines**

The MSHCP Urban/Wildlands Interface guidelines presented in Section 6.1.4 are intended to address indirect effects associated with locating commercial, mixed uses and residential developments in proximity to a MSHCP Conservation Area. The Project Site is not located adjacent to an existing or proposed MSHCP Conservation Area.

The project is consistent with MSHCP Section 6.1.4.

### **Fuels Management**

The fuels management guidelines presented in Section 6.4 of the MSHCP are intended to address brush management activities around new development within or adjacent to MSHCP Conservation Areas. The Project Site is not located adjacent to an existing or proposed MSHCP Conservation Area.

The project is consistent with MSHCP Section 6.4.

### **UCR 2005 Long Range Development Plan EIR**

As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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.*

*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.”*

*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. (UCR 2005)”*

### **PS Open Space 1**

The proposed redevelopment project would not result in direct or indirect impacts to the steep and natural hillsides on the southeast campus area, designated as a Natural Open Space Reserve. The Project Site is an area designated as “Academic” in the 2005 LRDP Amendment 2 Land Use Plan. The Project Site is completely developed/disturbed and/or characterized as ornamental/exotic landscaping. Construction of the proposed Project will avoid the steep slopes east of the Project Site as shown in Figure 4, *Project Site Plan Map*.

### **PS Open Space 2**

The proposed project is not located within or adjacent to a Natural Open Space Reserve.

### **PS Open Space 3**

The Project Site is in an area designated as “Academic” in the 2005 LRDP Amendment 2 Land Use Plan. However, the 2005 LRDP Amendment 2 defines this area in the Open Space Framework as “Naturalistic Open Space” and provides guidance on the character of the landscape in these areas. No undeveloped, native habitats, native trees, drainages or arroyos are located within the Project Site boundary. Construction of the proposed Project will avoid the steep slopes east of the Project Site as shown in Figure 4, *Project Site Plan Map*. As such, no direct or indirect impacts to the unnamed drainage, drainage flow line, or Detention Basin located east of the Project Site will occur as a result of project initiation. Non-native trees will be protected to the extent practicable.

### **PS Open Space 4**

The Project Site is not located adjacent to Valencia Hills Drive and its extension south of Big Springs Road, Martin Luther King Boulevard, or the I-215/SR-60 freeway.

### **PS Conservation 1**

The proposed redevelopment project would not result in direct or indirect impacts to native habitats, native trees, drainages or arroyos. The Project Site is completely developed/disturbed and/or characterized as ornamental/exotic landscaping. Non-native trees will be protected to the extent practicable.

## **PS Conservation 2**

The redevelopment project will ensure that impacts to water quality would be less than significant during both construction and operation. The Project contractor would implement standard best management practices (BMPs) during construction, incorporate landscape features that would capture on-site runoff and prevent discharge to the adjacent open space lands located east of the Project Site. As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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” (UCR 2005)*

Non-native trees will be protected to the extent practicable.

## **PS Conservation 3**

The Project Site is in an area designated as “Academic” in the 2005 LRDP Amendment 2 Land Use Plan which allows for the development of the proposed Project. Construction of the proposed Project will avoid the steep slopes east of the Project Site as shown on Figure 4, *Project Site Plan Map*. The Project Site is completely developed/disturbed and/or characterized as ornamental/exotic landscaping. Non-native trees will be protected to the extent practicable.

### **PP 4.4-1(a)**

The Project Site is in an area designated as “Academic” in the 2005 LRDP Amendment 2 Land Use Plan. Thus, the proposed Project is not located within or adjacent to a Natural Open Space Reserve. No habitat for federal or state listed floral or faunal species occurs onsite or immediately adjacent to the Project Site.

### **PP 4.4-1(B)**

The Project Site is in an area designated as “Academic” in the 2005 LRDP Amendment 2 Land Use Plan. However, the 2005 LRDP Amendment 2 defines this area in the Open Space Framework as “Naturalistic Open Space” and provides guidance on the character of the landscape in these areas. No undeveloped, native habitats, native trees, drainages or arroyos are located within the Project Site boundary. Construction of the proposed

Project will avoid the steep slopes east of the Project Site as shown on Figure 4, *Project Site Plan Map*. Thus, no direct or indirect impacts to the unnamed drainage, drainage flow line, or Detention Basin located east of the Project Site will occur as a result of project initiation. Non-native trees will be protected to the extent practicable.

The ornamental vegetation including, trees and shrubs within and immediately adjacent to the Project Site are expected to potentially provide nesting habitat for common and migratory birds and raptors protected under the federal Migratory Bird Treaty Act. The loss of an active nest would be considered a potentially significant impact. Potential direct/indirect impacts to common nesting bird and raptor species including the sensitive Cooper's hawk will require compliance with the federal MBTA. The following standard federal MBTA compliance requirements outlined below will ensure any potential impacts related to migratory nesting birds or raptors are less than significant.

**MM 4.4-4(a)** Prior to the onset of construction activities that would result in the removal of mature trees that would occur between March and mid-August, surveys 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 (UCR 2005).

**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 (UCR 2005).

#### **PP 4.4-1(B)**

The proposed Project would comply with NPDES requirements with implementation of BMP's as identified in the UCR Stormwater Management Plan.

#### **City of Riverside**

As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*"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." (UCR 2005)*

## SENSITIVE HABITATS

As stated by the California Department of Fish and Wildlife California Sensitive Natural Communities Descriptions:

*“One purpose of the vegetation classification is to assist in determining the level of rarity and imperilment of vegetation types. Ranking of alliances according to their degree of imperilment (as measured by rarity, trends, and threats) follows NatureServe’s Heritage Methodology, in which all alliances are listed with a G (global) and S (state) rank. For alliances with State ranks of S1-S3, all associations within them are also considered to be highly imperiled”. (CDFW 2018f)*

No sensitive or undisturbed native habitats were documented within the Project Site. The Project Site is characterized and dominated by developed, disturbed, and ornamental/exotic vegetation communities.

## SENSITIVE PLANTS

As outlined in the University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report, the Project Site was assessed to determine the potential for twenty (20) sensitive plant species known to or potentially occurring onsite, as presented in Table 2, *Sensitive Plant Species Assessment*.

**Table 2. Sensitive Plant Species Assessment**

Species Name (Scientific Name)  Status	Habitat Description	Comments
<b>Munz’s Onion</b> ( <i>Allium munzii</i> )  CRPR 1B.1 FE/ST	Perennial bulbiferous herb which generally blooms from March to May within mesic and clay soils in chaparral, coastal sage and grassland vegetation communities (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Marsh sandwort</b> ( <i>Arenaria paludicola</i> )  CRPR 1B.1 FE/SE	Perennial stoloniferous herb which generally blooms from May to August within sandy openings in Marshes and swamps. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Bristly Sedge</b> ( <i>Carex comosa</i> )  CRPR 2B.1	Perennial rhizomatous herb which generally blooms from May to September within coastal prairie, marshes, swamps and grassland vegetation communities. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.

<b>Species Name</b> ( <i>Scientific Name</i> )	<b>Habitat Description</b>	<b>Comments</b>
Status		
<b>Payson's Jewelflower</b> ( <i>Caulanthus simulans</i> )  CRPR 4.2	Annual herb which generally blooms from February to June within sandy and granitic soils in association with chaparral and coastal scrub vegetation. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Smooth tarplant</b> ( <i>Centromadia pungens</i> ssp. <i>laevis</i> )  CRPR 1B.1	Annual herb which generally blooms from April to September within chenopod scrub, meadows and seeps, playas, riparian woodland, valley and foothill grassland (alkaline substrates). (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Parry's spineflower</b> ( <i>Chorizanthe parryi</i> var. <i>parryi</i> )  CRPR 1B.1	Annual herb which generally blooms from April to June within chaparral, cismontane woodland, coastal scrub and grassland habitats with sandy and/or rocky openings. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Long-spined spineflower</b> ( <i>Chorizanthe polygonoides</i> var. <i>longispina</i> )  CRPR 1B.2	Annual herb which generally blooms from April to July often in clay soils associated with chaparral, coastal scrub, meadows, seeps, grassland, and vernal pool habitats. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Salt march bird's beak spineflower</b> ( <i>Cordylanthus maritimus</i> ssp. <i>maritimus</i> )  CRPR 1B.2 FE/SE	Annual herb generally blooms from May to November within coastal dunes, marshes and swamps. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Slender-horned spineflower</b> ( <i>Dodecahema leptoceras</i> )  CRPR 1B.1 FE/SE	Annual herb which generally blooms from April to June within chaparral, cismontane woodland and coastal scrub (alluvial fan) with sandy substrates. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Many-stemmed dudleya</b> ( <i>Dudleya multicaulis</i> )  CRPR 1B.2	Perennial herb which generally blooms from April to July within chaparral, coastal scrub and valley and foothill grassland often associated with clay substrates. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.

<b>Species Name</b> ( <i>Scientific Name</i> )	<b>Habitat Description</b>	<b>Comments</b>
Status		
<b>Santa Ana River woollystar</b> ( <i>Eriastrum densifolium ssp. sanctorum</i> )  CRPR 1B.1 FE/SE	Perennial herb which generally blooms from April to September within chaparral, coastal scrub (alluvial fan) in sandy and gravelly substrates. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>California (Alvin Meadow) bedstraw</b> ( <i>Galium californicum ssp. primum</i> )  CRPR 1B.2	Perennial herb which generally blooms from May to July within granitic and sandy soils in association with chaparral and lower montane coniferous forest. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Coulter's goldfields</b> ( <i>Lasthenia glabrata ssp. coulteri</i> )  CRPR 1B.2	Annual herb which generally blooms from February to June within marsh, swamp, playa and vernal pool habitats. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Robinson's pepper-grass</b> ( <i>Lepidium virginicum var. robinsonii</i> )  CRPR 4.3	Annual herb which generally blooms from January to July within chaparral and coastal sage scrub habitats. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Parish's desert-thorn</b> ( <i>Lycium parishii</i> )  CRPR 4.3	Perennial shrub which generally blooms from March to April within coastal scrub and Sonoran Desert Scrub vegetation communities. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Pringle's Monardella</b> ( <i>Monardella pringlei</i> )  CRPR 2B.3	Perennial shrub which generally blooms from March to April within coastal scrub and Sonoran Desert scrub vegetation. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Little mousetail</b> ( <i>Myosurus minimus ssp. apus</i> )  CRPR 3.1	Annual herb which generally blooms from March to June within grassland and alkaline vernal pool vegetation communities. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Parish's gooseberry</b> ( <i>Ribes divaricatum var. parishii</i> )  CRPR 4.3	Perennial deciduous scrub which generally blooms from February to April within riparian woodland vegetation. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.

<b>Species Name</b> <i>(Scientific Name)</i>	<b>Habitat Description</b>	<b>Comments</b>
Status  <b>Gambel's watercress</b> <i>(Rorippa gambellii)</i>  CRPR 1B.1 FE/ST	Perennial rhizomatous herb which generally blooms from April to October in marsh and swamp habitats. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<b>Salt spring checkerbloom</b> <i>(Sidalcea neomexicana)</i>  CRPR 2.2	Perennial herb which generally blooms from March to June within chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, and playas within alkaline and mesic substrates gravelly substrates. (CNPS 2018)	Not expected to occur onsite based on a lack of suitable soils and habitat.
<p><b>California Native Plant Society (CNPS): California Rare Plant Rank (CRPR)</b>            CRPR 1A – Plants presumed extinct in California.            CRPR 1B – Plants rare, threatened, or endangered in California, but more common elsewhere.            CRPR 2 – Plants rare, threatened, or endangered in California, but more common elsewhere.            CRPR 3 – Plants about which we need more information, a review list.            CRPR 4 – Species of limited distribution in California (i.e., naturally rare or in the wild), but whose existence does not appear to be susceptible to threat.            .1 – Seriously endangered in California            .2 – Fairly endangered in California            .3 – Not very endangered in California</p> <p><b>Federal (USFWS) Protection and Classification</b>            FE – Federally Endangered            FC – Federal Candidate for Listing</p> <p><b>State (CDFW) Protection and Classification</b>            SE – State Endangered</p>		

No suitable habitat for sensitive plant species including those listed as federal or state threatened/endangered was documented within the Project Site during the time of the reconnaissance survey. No sensitive plant species listed in Table 2 or undisturbed native habitats were documented or expected to occur within the Project Site. The Project Site is characterized and dominated by developed, disturbed, and ornamental/exotic vegetation communities.

## SENSITIVE WILDLIFE

As outlined in the University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report, the Project Site was assessed to determine the potential for twenty-three (23) sensitive wildlife species known to or potentially occurring onsite, as presented in Table 3, *Sensitive Wildlife Species Assessment*.

**Table 3. Sensitive Wildlife Species Assessment**

<b>Species Name</b> ( <i>Scientific Name</i> )	<b>Habitat Description</b>	<b>Comments</b>
Status		
<b>INVERTEBRATES</b>		
<b>Delhi Sands flower-loving fly</b> ( <i>Rhaphiomidas terminatus abdominalis</i> )  FE	Restricted to Delhi sand formations in Riverside and San Bernardino Counties.	Not expected to occur onsite based on a lack of suitable soils.
<b>FISH</b>		
<b>Santa Ana sucker</b> ( <i>Catostomus santaanae</i> )  FT/SSC	Potential habitat for the Santa Ana sucker includes the open water channels and emergent vegetation (freshwater marsh) areas in higher gradient stream sections for the entire length of the Santa Ana River within the Plan Area. (MSHCP 2004)	Not expected to occur onsite based on a lack of suitable habitat.
<b>Arroyo chub</b> ( <i>Gila orcutti</i> )  SSC	Slow water stream with mud or sand bottoms. (UCR 2005)	Not expected to occur onsite based on a lack of suitable habitat.
<b>Santa Ana speckled dace</b> ( <i>Rhinichthys osculus</i> ) ssp.3  SSC	Permanent flowing water. (UCR 2005)	Not expected to occur onsite based on a lack of suitable habitat.
<b>AMPHIBIANS</b>		
<b>Western Spadefoot</b> ( <i>Spea hammondi</i> )  SSC	Vernal pools, swales and even man-made pools with needed hydrology, warm water temperatures, nearby upland estivation sites, and limited predators.	Not expected to occur onsite based on a lack of suitable breeding and aestivation habitat.
<b>REPTILES</b>		
<b>Orange-throated whiptail</b> ( <i>Aspidoscelis hyperythra</i> )  WL	Inhabits low-elevation coastal scrub and chaparral. Occurs on or adjacent to floodplains or the terraces of streams, in or by open sage scrub and chaparral communities.	Not expected to occur onsite based on a lack of suitable habitat.
<b>Coastal whiptail</b> ( <i>Aspidoscelis tigris stejnegeri</i> )  SSC	Primarily open desert areas, also woodland and riparian areas. (UCR 2005)	Not expected to occur onsite based on a lack of suitable habitat.

<b>Species Name</b> ( <i>Scientific Name</i> )	<b>Habitat Description</b>	<b>Comments</b>
Status		
<b>Red-diamond rattlesnake</b> ( <i>Crotalus ruber</i> )	Areas of heavy brush, such as chamise chaparral, boulders and rocky outcrops.	Not expected to occur onsite based on a lack of suitable habitat.
SSC		
<b>Coast horned lizard</b> ( <i>Phrynosoma blainvillii</i> )	The horned lizard occurs primarily in scrub, chaparral, and grassland habitats.	Not observed or expected to occur onsite based on a lack of suitable habitat and disturbed conditions onsite.
SSC		
<b>BIRDS</b>		
<b>Tricolored blackbird</b> ( <i>Agelaius tricolor</i> )	Marshes, agricultural fields, sewage treatment plants, or stockyards and grasslands with open water.	Not expected to occur onsite based on a lack of suitable habitat.
ST		
<b>Cooper's hawk</b> ( <i>Accipiter cooperii</i> )	Cooper's hawk is most commonly found within or adjacent to riparian/oak forest and woodland habitats. This uncommon resident of California increases in numbers during winter migration.	Cooper's hawks occasionally nest in large pines and Eucalyptus trees. No nests were documented onsite. However, the large <i>Eucalyptus</i> trees located within and adjacent to the Project Site represent suitable nesting sites (refer to Figure 5).
SSC		
<b>Burrowing owl</b> ( <i>Athene cunicularia</i> )	The burrowing owl uses predominantly open land, including grassland, agriculture (e.g., dry-land farming and grazing areas), playa, and sparse coastal sage scrub and desert scrub habitats. Some breeding burrowing owls are year-round residents and additional individuals from the north may winter throughout the region.	No suitable burrows, refugia or foraging habitat was documented within the Project Site.  Not expected to occur onsite based on a lack of suitable habitat.
SSC		
<b>Long-eared owl</b> ( <i>Asio otus</i> )	Riparian and oak forests. Hunts small mammals at night in adjacent open habitats.	Not expected to breed onsite based on a lack of suitable habitat.
SSC		
<b>Western yellow-billed cuckoo</b> ( <i>Coccyzus americanus occidentalis</i> )	The western yellow-billed cuckoo inhabits dense riparian and shrub communities.	Not expected to occur onsite based on a lack of suitable riparian habitat.
FT/SE		

<b>Species Name</b> ( <i>Scientific Name</i> )	<b>Habitat Description</b>	<b>Comments</b>
Status		
<b>White-tailed kite</b> ( <i>Elanus leucurus</i> )  SFP	The white-tailed kite is found in riparian, oak woodlands adjacent to open spaces including grasslands, wetlands, savannahs and agricultural fields. This non-migratory bird occurs in lower elevations of California.	Not observed or expected to occur onsite based on a lack of suitable habitat.
<b>Bald eagle</b> ( <i>Haliaeetus leucocephalus</i> )  SFP/SE	Largely restricted to extensive lakes with limited disturbance.	Not expected to occur onsite based on a lack of suitable habitat.
<b>Loggerhead shrike</b> ( <i>Lanius ludovicianus</i> )  SSC	Open, dry areas, usually with some bare ground, limited disturbance, and abundant prey (large insects, lizards, etc.).	Not expected to occur onsite based on a lack of suitable habitat.
<b>Coastal California gnatcatcher</b> ( <i>Polioptila californica californica</i> )  FT/SSC	The coastal California gnatcatcher is a non-migratory bird species that primarily occurs within sage scrub habitats in coastal southern California dominated by California sagebrush.	Not expected to occur onsite based on a lack of suitable habitat. No suitable coastal California gnatcatcher habitat was documented onsite or immediate adjacent to the Project Site by USFWS permitted biologist Ruben Ramirez (USFWS Permit 780566-13, CDFW Permit 02243)
<b>Least Bell's vireo</b> ( <i>Vireo bellii pusillus</i> )  FE/SE	Least Bell's vireo reside in riparian habitats with a well-defined understory including southern willow scrub, mulefat, and riparian forest/woodland habitats.	Not expected to occur onsite based on a lack of suitable riparian habitat.
<b>MAMMALS</b>		
<b>Northwestern San Diego pocket mouse</b> ( <i>Chaetodipus fallax fallax</i> )  SSC	The northwestern San Diego pocket mouse occurs in coastal sage, upland sage scrubs, and alluvial fan sage scrub, sage scrub/grassland ecotones, chaparral, and desert scrubs at all elevations up to 6,000 feet.	Not expected to occur onsite based on a lack of suitable habitat.

<b>Species Name</b> ( <i>Scientific Name</i> )	<b>Habitat Description</b>	<b>Comments</b>
Status		
<b>San Bernardino kangaroo rat</b> ( <i>Dipodomys merriami parvus</i> )	Prefers alluvial scrub, coastal sage scrub habitats with sandy and gravelly substrates.	Not expected to occur onsite based on a lack of suitable habitat.
FE/SSC		
<b>Stephens' kangaroo rat</b> ( <i>Dipodomys stephensi</i> )	Primarily grasslands, also coastal scrub and sagebrush. (UCR 2005)	Not expected to occur onsite based on a lack of suitable habitat.
FE/ST		
<b>Los Angeles pocket mouse</b> ( <i>Perognathus longimembris brevinasus</i> )	Low elevation grassland alluvial sage scrub and coastal sage scrub habitats.	Not expected to occur onsite based on a lack of suitable habitat.
SSC		
<p><b>Federal (USFWS) Protection and Classification</b>  FE – Federally Endangered  FC – Federal Candidate for Listing</p> <p><b>State (CDFW) Protection and Classification</b>  SE – State Endangered  SSC – State Species of Special Concern  CWL – California Watch List  SPF – State Fully Protected</p>		

The Eucalyptus trees within and immediately adjacent to the southeast Project Site boundary represents potential nesting habitat for the Cooper's hawk. The large mature Eucalyptus trees represent potential nesting habitat for the species (refer to Figure 5). It is anticipated that the Eucalyptus trees located onsite would be removed for the new building. As previously stated, the loss of an active nest would be considered a potentially significant impact. Standard required compliance with the MBTA, as described below, will ensure potential impacts to common and/or sensitive nesting birds are reduced to a level below significant.

The Project Site does not occur within or adjacent to a USFWS designated critical habitat for any federally listed threatened or endangered species.

## JURISDICTIONAL WETLAND RESOURCES

No wetlands or jurisdictional resources regulated by the USACE, CDFW, or RWQCB were documented within or immediately adjacent to the Project Site. As previously stated, an unnamed drainage flow line is located approximately 54 feet east of the Project Site. The unnamed drainage is dominated by non-native grassland vegetation, whose flow line drains approx. 170 feet northeast of the Project Site into a Detention Basin as shown on Figure 2, *Project Site Vicinity Map*. These offsite regulated resources will not be directly or indirectly impacted as a result of project initiation.

Impacts to water quality would be less than significant during both construction and operation. The Project contractor would implement standard best management practices

(BMPs) during construction, incorporate landscape features that would capture on-site runoff and prevent discharge to the adjacent open space lands located east of the Project Site. As stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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” (UCR 2005)*

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## STANDARD FEDERAL COMPLIANCE

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A review of all biological mitigation measures outlined in the University of California, Riverside 2005 Long Range Development Plan Environmental Impact Report was conducted to determine which if any are applicable to the proposed project. The proposed project would not result in adverse impacts to candidate, sensitive, or special status plant and wildlife species as shown in Figure 8, *Vegetation Communities Impact Map*. Based on the existing conditions documented onsite and lack of impacts to jurisdictional resources, wildlife corridors or suitable habitat for sensitive species other than the Cooper’s hawk, no mitigation measures to reduce impacts to sensitive species, resources regulated by the USACE, CDFW, RWQCB, or wildlife linkages/open space are warranted or required.

Potential direct/indirect impacts to common nesting bird and raptor species including the sensitive Cooper’s hawk will require compliance with the federal Migratory Bird Treaty Act. The following standard federal MBTA compliance requirement outlined below will ensure any potential impacts related to migratory nesting birds or raptors are less than significant.

### **Federal Migratory Bird Treaty Act**

The ornamental vegetation documented onsite including both trees and shrubs provide suitable habitat for nesting birds and raptors regulated by the federal MBTA. Therefore, as stated in the University of California, Riverside 2005 Long Range Development Plan Amendment 2 Environmental Impact Report:

*“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(a)) (UCR 2005).*

*“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 (MM 4.4-4(b)) (UCR 2005).*

Following implementation of MM 4.4-4 (a) and (b) as outlined above and in the UCR LRDP, the project will be in compliance with all applicable Planning Strategies, Programs and Practices, and Mitigation Measures and potentially significant impacts associated with impacting nesting birds would be reduced to a less-than-significant level

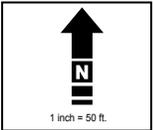


Central Portion of APN 253-100-005

 Impact Area

**Figure 8 - Vegetation Communities Impact Map**

*Biological Resources Technical Report  
Plant Growth Environmental Facility Project, UCR*



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Certification "*I hereby certify that the statements furnished above and in the attached exhibits present the data and information required for this biological evaluation, and that the facts, statements, and information presented are true and correct to the best of my knowledge*".

Author:  Date: February 8<sup>th</sup>, 2019

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**Appendix C**  
**Historic Building Assessment**

**Historic Building Assessment  
for the University of California Riverside  
Plant Growth Environments Facility  
(PGEF) Project in the City of Riverside,  
Riverside County, California**

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July 2018  
(Update December 2018)

Keywords: USGS Riverside East, Calif. 7.5' Quadrangle; in Township 2 South, Range 4 West, San Bernardino Baseline & Meridian; City of Riverside, Riverside County; University of California Riverside Campus

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## MANAGEMENT SUMMARY

The University of California Riverside (UCR) proposes the UCR Plant Growth Environments Facility Project (PGEF, Project) located on the UCR campus on East Campus Drive, east of the intersection with Eucalyptus Drive in the southeast portion of the City of Riverside, Riverside County, California. The Project site is currently developed with Lath House B, four plant growth glass houses, one Arabidopsis plant growth house (Arabidopsis is a type of small flowering plants related to cabbage and mustard), a temporary compost toilet, and a metal shed totaling 13,106 square feet. The proposed Project would involve the demolition of all the facilities on site, removal of existing landscape along the northern and southern portion of the site, and removal of associated pavement for the construction of a 2-story, approximately 38,000 square foot PGEF, one Americans with Disabilities (ADA) accessible parking space, a hammerhead driveway, and associated on-site improvements. There are no off-campus modifications associated with the proposed Project. UCR, as Lead Agency for the Project, required this study in support of both the project planning and design process and the environmental review process to comply with the California Environmental Quality Act (CEQA).

Whenever a building over 50 years old is proposed for demolition, the University of California is required under CEQA to assess whether or not the loss would have an adverse effect on a potential cultural resource. Lath House B, four plant growth glass houses, and one Arabidopsis plant growth house met the 50-year age threshold to be considered a potential historical resource under the California Register of Historical Resources (CRHR). Applied EarthWorks, Inc. (Æ) was retained to conduct a historic buildings assessment in accordance with CEQA guidelines. The scope of work included a literature and records search through the Eastern Information Center (EIC) at UCR; an intensive-level pedestrian survey and inspection of the subject buildings; and background research on the history and development of UCR and the subject structures. This report provides the results of the study.

Meeting the age criteria to be considered a potential historical resource, Lath House B and associated plant growth structures were recorded and evaluated for historical significance during the current study. Æ architectural historian Annie McCausland, M.A., who meets the U.S. Secretary of the Interior's professional qualification standards, evaluated the historical significance of the building and structures based on in-depth historical background research and by applying the four criteria of the CRHR. Historical background research on the development, and growth of the University of California Riverside, and the current condition of the building and subject structures, has demonstrated that while they do meet Criterion 1 of the CRHR, Lath House B and associated plant growth structures no longer retain integrity and do not qualify as historical resources according to CEQA.

Field notes documenting the current investigation are on file at Æ's Hemet office. A copy of this report and Department of Parks & Recreation (DPR) 523 recording forms documenting the subject building and structures will be placed on file at the EIC for inclusion in the California Historical Resources Information System (CHRIS). They are attached herein.

# 1 INTRODUCTION

The University of California Riverside (UCR) proposes to demolish Lath House B, four plant growth glass houses, one Arabidopsis plant growth house (Arabidopsis is a type of small flowering plants related to cabbage and mustard), a temporary compost toilet, and a metal shed totaling approximately 13,106 square feet, and removal of existing landscape along the northern, southern, and western portion of the site on the UCR campus for the UCR Plant Growth Environments Facility Project (PGEF, Project). The building and structures will be demolished for the construction of a 2-story, approximately 38,000 square foot PGEF, one ADA accessible parking space, a hammerhead driveway, and associated on-site improvements. The Project must comply with the California Environmental Quality Act (CEQA).

The Project is situated on the UCR campus in the southeast portion on East Campus Drive, east of the intersection with Eucalyptus Drive in the southeast portion of the City of Riverside, Riverside County, California (Figure 1-1). The Project encompasses approximately 1.25 acres within Township 2 South, Range 4 West, San Bernardino Baseline & Meridian, Section 29 (Figures 1-1 and 1-2). Elevation of the Project is approximately 1,122 feet above mean sea level.

## 1.1 SCOPE AND PURPOSE OF INVESTIGATION

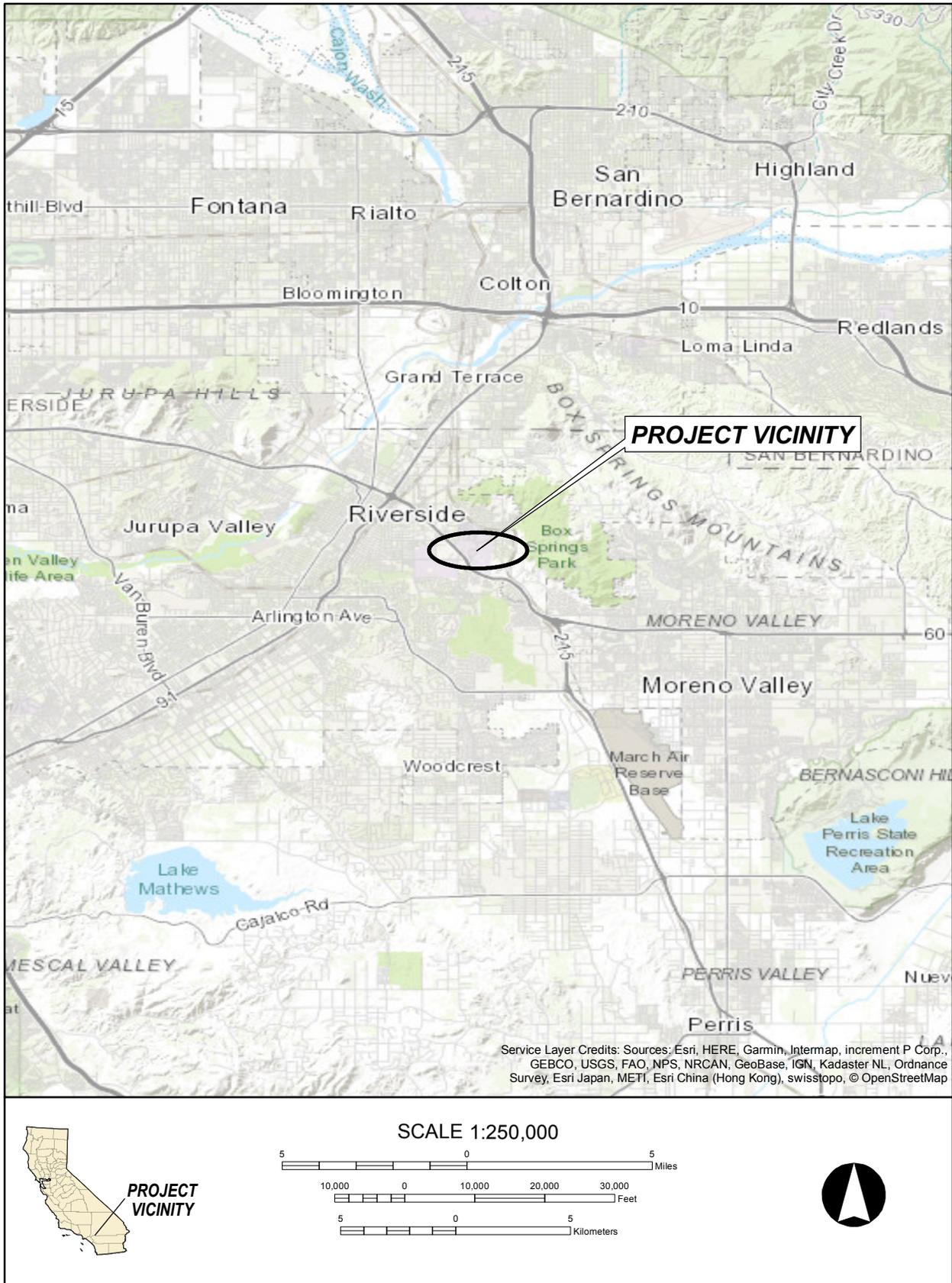
Applied EarthWorks, Inc. (Æ) was retained to conduct a historic building assessment of Lath House B and associated plant growth structures. The scope of work included a literature and records search through the Eastern Information Center (EIC) at UCR; an intensive-level pedestrian survey and inspection of the subject buildings; and background research on the history and development of University of California Riverside and the subject building and structures.

Joan George served as Æ's Project Manager and developed the scope of work, which included defining the Project area of potential impact. Æ architectural historian Annie McCausland, M.A. conducted background research, and a historic building assessment. Ms. McCausland conducted a historical resource literature and records search at the EIC on April 26, 2018, that covered the subject parcel and its immediate surroundings within the Project boundaries. McCausland also conducted a field inspection of the subject building and structures on April 26, 2018, immediately followed by archival research and evaluation of building and structures historical significance.

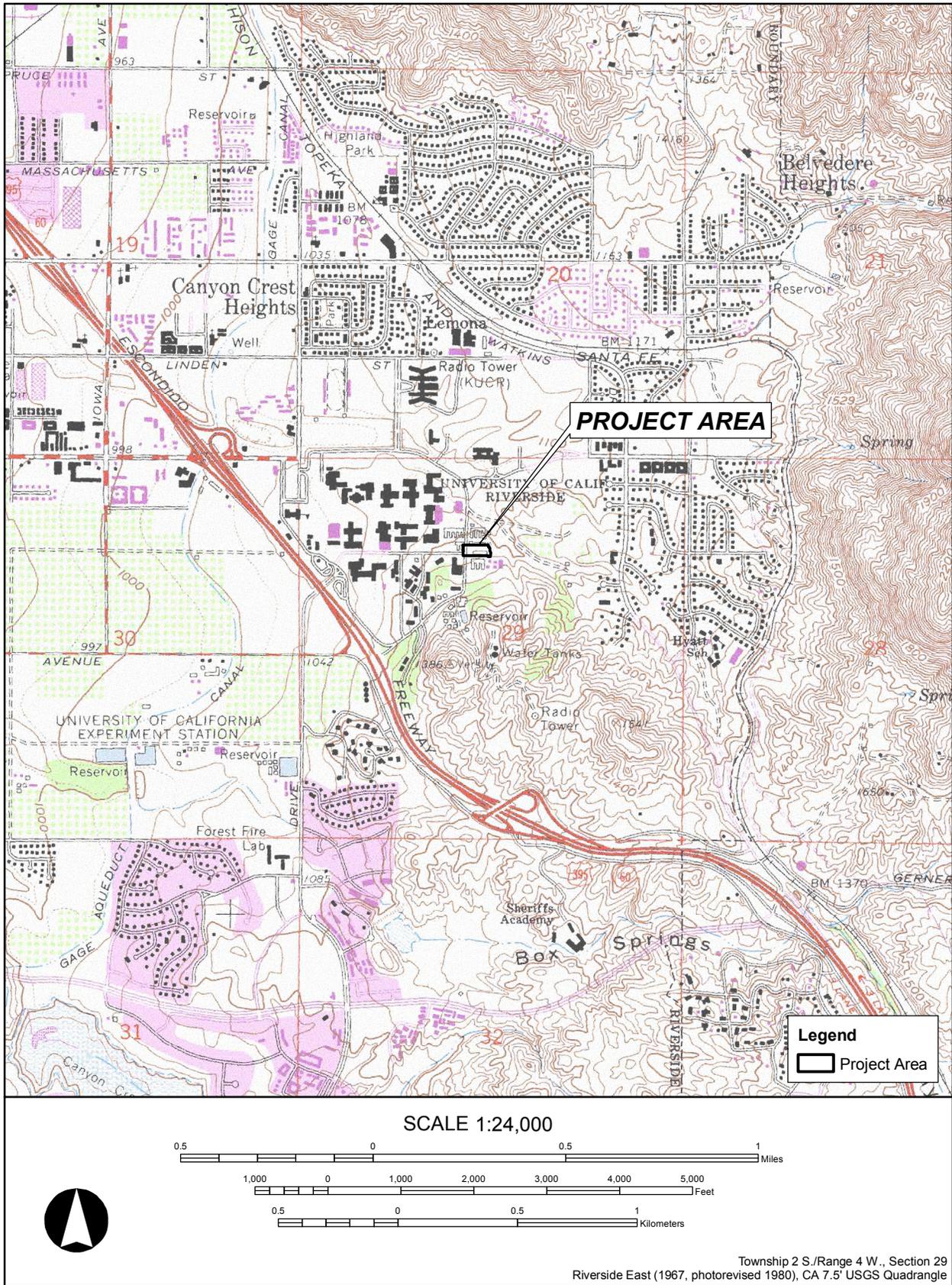
## 1.2 REGULATORY CONTEXT

### 1.2.1 California Environmental Quality Act

The proposed Project is subject to compliance with CEQA, as amended and the UCR is the CEQA lead agency for the Project. Therefore, cultural resource management work conducted as part of the proposed Project complied with the *CEQA Statutes and Guidelines* (California Governor's Office of Planning and Research 2016), which directs lead agencies to first determine whether cultural resources are "historically significant" resources. A project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant impact on the environment.



**Figure 1-1** Project vicinity map.



**Figure 1-2 Project location map.**

Historical resources include those resources currently listed in, or determined eligible for, listing in the California Register of Historic Resources (CRHR) (Title 14 CCR, § 15064.5(a)(1)); resources included in a local register of historical resources or identified as significant in a historical survey (Title 14 CCR, § 15064.5(a)(2)); or resources determined to be “historically significant” by a lead agency. Historical resources generally must be 50 years old or older and meets the requirements for listing on the CRHR by qualifying under at least one of the following four criteria:

- 1) Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
- 2) Is associated with the lives of persons important in our past;
- 3) Embodies 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; or,
- 4) Has yielded, or may be likely to yield, information important in prehistory or history. (Title 14 CCR, § 15064.5; Title 14 CCR, § 452(b))

The lead agency may also determine that a property is a potential historical resource in cases where the resource was not listed in or determined eligible for the CRHR, was not included in a local register, or was not identified in a historical survey as meeting the criteria of significance and integrity (Title 14 CCR, § 15064.5(a)(4)).

These criteria, by which CRHR eligibility is judged, are essential for identifying and managing historical resources. In pragmatic terms, a substantial adverse change in the significance of a historical resource must be avoided or mitigated by feasible measures enforced by the Lead Agency through permit conditions, agreements, or other measures (Title 14 CCR § 15064.5(b)(4)).

The cited statutes and guidelines specify how cultural resources are to be managed in the context of projects, such as the proposed Project at UCR. Briefly, archival and field surveys must be conducted, and identified cultural resources must be inventoried and evaluated in prescribed ways. Prehistoric and historical archaeological resources, as well as historical resources such as buildings, structures, and other built-environment features deemed “historically significant” must be considered in project planning and development. Impacts to significant historical resources must be avoided.

### **1.2.2 UCR Long Range Development Plan (LRDP)**

**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 15064.6. 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 4.5-2** - 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.

### **1.3 REPORT ORGANIZATION**

This report documents the results of the historic building assessment in accordance with CEQA. Chapter 1 has introduced the scope of the work and stated regulatory requirements. Chapter 2 synthesizes the historical setting of the Project area. Chapter 3 presents the results of the historical resource literature and records search conducted at the EIC of the California Historical Resource Information System (CHRIS). A research design for carrying out this study is provided in Chapter 4. The survey methods employed during this investigation, as well as findings are provided in Chapter 5. An evaluation of historical significance is provided in Chapter 6. Conclusions and recommendations are included in Chapter 7, and bibliographic references are cited in Chapter 8. Department of Parks & Recreation (DPR) 523 recording forms documenting the buildings are attached in Appendix A.

## HISTORICAL BACKGROUND

### 2.1 THE CITRUS EXPERIMENT STATION

The California Citrus Experiment Station (CES) was founded in 1907 as a field unit of the University of California Agricultural Experiment Station. The demand for a citrus-focused pathology laboratory and experiment station was much needed in southern California, the citrus capital of the United States in the late nineteenth to mid-twentieth centuries. The original CES was located on 30 acres at the base of Mount Rubidoux and manned by a small staff of one scientist and one assistant. Here they conducted investigations on horticultural management, fertilization, irrigation, fruit handling, and improvement of varieties (UCR 2010).

In 1913, a record breaking frost devastated the southern California citrus industry. In response, farmers demanded more state-funded agricultural research and the State of California decided to fund the enlargement and expansion of the CES. The new Director, Herbert John Webber, was given \$185,000 to build a new CES laboratory. The 475-acre Box Springs site, east of downtown Riverside and west of Box Springs Mountain was selected as the location for new CES citrus groves, laboratories, and infrastructure (UCR 2010).

Lester H. Hibbard of Los Angeles, a graduate of the University of California School of Architecture, in association with a colleague, H. B. Cody, designed the original laboratory, farm, and residence buildings on the Box Springs site. The buildings were designed in the Mission revival style to represent the Spanish colonial heritage of southern California (Figure 2-1). The Box Springs site, which became the early nucleus of the UCR campus, opened in 1917, although the Division of Agricultural Chemistry continued to occupy lab space at the Rubidoux site. The Rubidoux site is today occupied by the UC Center for Water Resources, while the CES headquarters is still extant on the Box Springs Site on the UCR campus. The CES laboratory was listed as a California Historic Point of Interest in 1969.



**Figure 2-1. CES laboratory, circa 1916 (University Archives, Citrus Research Center Records).**

The Box Springs campus continued to expand in the 1920s under the management of Director Herbert John Webber. Webber recruited 11 scientists for six new divisions including agricultural chemistry, plant physiology, plant pathology, entomology, plant breeding, and orchard management. To support the growth of the CES, new plant facilities were added to the property including head houses, glass houses, and lath houses as well as irrigation systems, storage infrastructure, garages, and a water reservoir (Figure 2-2). Webber also initiated the development of the Citrus Variety Collection on 5 acres planted with approximately 500 species of citrus from

around the world, which grew to become the greatest international variety collection. Webber continued as the CES Director until 1929 (UCR 2010).



**Figure 2-2. Early CES lath house, 1929 (University Archives, Citrus Research Center Records).**

Faculty member Howard S. Fawcett assumed leadership when Webber retired. Fawcett expanded research topics at the CES to include diseases of avocados, ornamentals, vegetables, and other crops. Fawcett also created strong connections with the University of California Los Angeles (UCLA) plant sciences departments. Leo J. Klotz became chair in 1946, upon the retirement of Fawcett.

After World War II (WWII) the CES campus continued to grow and expand its infrastructure and departments as a subsidiary campus of the University of California (UC) system. However, it was soon realized that southern California was in need of another UC campus to accommodate the region's growing population. The Riverside community including the Chamber of Commerce, local teachers, political groups, and Riverside citizens joined together to create a booster club called the Citizens University Committee. This group worked to persuade the UC regents and the State of California that Riverside was the perfect spot for a UC campus. In 1948, \$2 million was granted from Governor Earl Warren to build a new UC undergraduate liberal arts campus in Riverside on the Box Springs site, around the CES. Planning commenced soon after as shown in Figures 2-3, 2-4, and 2-5 (UCR 2010).

The CES continued to operate separately from the new UCR campus which opened in 1954. In 1957, the CES celebrated its 50<sup>th</sup> anniversary and had increased its staff to 115 academics and 150 research technicians. The CES campus also expanded in the 1950s with new office buildings, green houses, glass houses, and acres of experimental plantings. The CES focus was no longer only on citrus, but on all crops grown in southern California (UCR 2010).



**Figure 2-3. Air Photo-University of California CES, 1948 (University Archives, Citrus Research Center Records).**



**Figure 2-4. CES, aerial photograph, 1949 (University Archives, Citrus Research Center Records).**



## 2.2 UNIVERSITY OF CALIFORNIA RIVERSIDE

UCR developed differently from most UC campuses. It first opened as an undergraduate liberal arts college in 1954 on the CES Box Springs site. The first campus Provost was Gordon Watkins. He established the College of Letters and Sciences as four divisions instead of departments. The divisions included the humanities, social sciences, physical sciences, and life sciences. Watkins also established a University library and a department of physical education. Webber Hall and Watkins Hall were constructed in 1952 around a large central lawn. The library was constructed in 1953, and in 1954, the new UCR campus was opened. Watkins left UCR in 1956, the same year the campus was listed as one of the top 10 best undergraduate colleges in the nation (UCR 2010).

In 1956, the UC Regents reevaluated UCR as an undergraduate liberal arts college. They decided that an undergraduate liberal arts college belonged in the state college system and not the UC system. The UC system was intended for instruction and research. However, in 1959, UCR was designated a full-fledged University of California campus with graduate programs and professional schools.

Herman Theodore Spieth was campus Provost from 1956 to 1964 and oversaw the transition of UCR from a liberal arts college into the UC system. He tightened the bond between the CES and UCR by founding the College of Agriculture which combined the work of the CES with undergraduate and graduate teaching. The Graduate Division opened in 1961 with letters, sciences, and agriculture programs attracting students from all over the world. That same year, the UC Regents renamed CES, the Citrus Research Center and Agricultural Experiment Station (CRC-AES).

With the expansion of UCR College of Agriculture and the CRC-AES, there was more funding to expand plant growth infrastructure on campus. The mesa area on campus was allocated to the Division of Life Sciences where plant growth facilities, including glass houses and lath houses, were constructed in the 1950s and 1960s to support the Life Sciences departments including the Department of Horticulture, now known as the Department of Botany and Plant Sciences. The subject glass houses were constructed in 1956 and moved to their current location sometime after 1965. The subject Lath House B was constructed in its current location in 1965 as shown in Figure 2-6. The subject Arabidopsis plant growth house was constructed in 1965 and moved to its current location sometime after 1965 (University Archives 1965; University of California Riverside Department of Architects & Engineers 2018).



**Figure 2-6. Portion of UCR campus showing Lath House B on mesa (center), 1965 (University Archives, Citrus Research Center Records).**

## **3 SOURCES CONSULTED**

### **3.1 INTRODUCTION**

Various sources were consulted as part of this historic building assessment. Included were historical resource records and literature housed at the EIC on the campus of UCR. For information pertaining to the history and development of the subject site and UCR, numerous sources were consulted as part of historical background research. A detailed discussion of the sources consulted and results of these investigations are provided below, as well as in subsequent sections of this report that discuss the historical development of the subject site. The data gathered from references consulted are on file at Applied EarthWorks' Hemet office and are fully referenced in Chapter 8.

### **3.2 CULTURAL RESOURCE LITERATURE AND RECORDS SEARCH**

Prior to the historic building survey, a historic resources literature and records search was conducted by Annie McCausland at the EIC on April 26, 2018. The EIC is maintained under the auspices of the California State Office of Historic Preservation (OHP) as the CHRIS responsible for providing coverage of Riverside County. The objective of the records search was to determine whether or not the subject building and structures on the Project site, or within the immediate vicinity, had been previously documented as historical resources. The scope of the records search included the Project area and all the land within the subject site and immediate surroundings. Sources consulted during the literature and records search include DPR 523 recording forms and historic resource location maps, the National Register of Historic Places (NRHP), the OHP Directory of Properties in the Historic Property Data File, and the listings of California Historical Landmarks and California Points of Historical Interest.

The results of the records search indicate that no previous historic resource surveys had been conducted within close proximity to the Project area. One cultural resource was identified nearby, the Citrus Experiment Station which was identified as a California Historic Point of Interest in 1969. None of the subject buildings within the Project area had been previously recorded in the CHRIS.

### **3.3 HISTORICAL BACKGROUND RESEARCH**

For information pertaining to the history and development of the subject structures, numerous sources were consulted as part of historical background research. These sources included historical USGS maps and aerial photographs; photographs, glass slides, and building plans at the UCR University Archives and Special Collections; and UCR online sources including the Citrus Variety Collection, Botany and Plant Sciences Department History, and Plant Growth Facilities.

USGS maps included the Riverside, Calif. 1:62,500 scale quadrangle dated 1942; the Riverside East, Calif. 1:24,000 scale quadrangle dated 1953; the Riverside East, Calif. 1:24,000 scale quadrangle of 1967; and the Riverside East, Calif. 1:24,000 scale quadrangle of 1980. Historical aerials reviewed included those from NETROnline (2016) dated 1967, 1978, 1980, 1994, 2002,

2005, 2009, 2010, and 2012 as well as aerials from the UCR University Archives dated 1948, 1952, 1959, and 1965. Building plans, conceptual drawings, and photographs from UCR's Strategic Communication collection and the Citrus Research Center records were also considered.

In addition to these sources of information, the University of California Department of Architects & Engineers was contacted on April 30, 2018, regarding the construction and developmental history of the subject building and structures. Planner, Jaime Engbrecht, responded on May 22, 2018 and provided the *UCR PGE Structure Information* spreadsheet with the subject buildings' original construction dates.

## 4

### RESEARCH DESIGN

The Project research design focuses on the identification, delineation, and documentation of any previously unidentified historic-period buildings and/or structures within the Project area, should they exist. For purposes of this study, cultural resources are defined as any building, structure, or object greater than 50 years old. CEQA requires structures over 50 years of age be considered when evaluating historical resources. The Lath House and the Arabidopsis growth house on the subject site were built in 1965, and four plant growth glass houses in 1956, making the subject building and structures more than 50 years old. Meeting the CEQA threshold of 50-year age to be considered a potential historical resource, the Lath House and associated structures were recorded on a DPR form and evaluated for local, state, and national significance during the current study.

In order for the subject building and structures to be considered important and/or significant from a cultural resource perspective, they must retain some degree of historical integrity, as the contextual information is paramount in providing valuable insight and/or advancements in our understanding of local history and culture. The National Park Service defines historic context as “information about historic trends and properties grouped by important themes in the prehistory or history of a community, State, or the nation during a particular period of time. Because historic contexts are organized by theme, place, and time, they link historic properties to important historic trends” (NPS 1997:4). As well, a cultural resource must meet at least one of the criteria for listing on the CRHR in order to be considered significant at the state level.

## SURVEY METHODS AND RESULTS

### 5.1 SURVEY METHODS

The primary purpose of this historic building assessment is to inspect and document the building and structures on the subject site, assess their age, use, and condition, research their construction history, and evaluate their collective and individual significance to determine if any are eligible for listing on the CRHR.

In order to complete this task, Æ architectural historian Annie McCausland first performed a desktop review of aerial and satellite imagery and historic maps, followed by a reconnaissance-level field inspection of the Project area on April 26, 2018. The purpose was to identify all buildings and structures located on the subject site, and any other features of the built environment, dating prior to 1969, which would meet the 50-year age threshold for consideration as a potential historical resource as detailed above. The survey consisted of pedestrian transects across the Project area, and individual inspection of each building and structure found on the Project site.

Once the field recording was completed, additional research was conducted to explore the historical background and development of UCR and the subject building. Finally, the appropriate DPR recording form was compiled in the office to document the historic-age building and structures that were encountered during this survey and may be subject to impacts as part of the proposed Project.

### 5.2 SURVEY RESULTS

In total, one lath house (Lath House B), four plant growth glass houses (identified as 2, 3, 4, 5 on Figure 5-1), and one Arabidopsis plant growth house (identified as 1 on Figure 5-1) have been identified as structures over 50 years old within the Project area (Figure 5-1). A temporary compost toilet and metal shed are also extant within the Project area but being less than 50 years old, were not documented in this study. The Lath House, four plant growth glass houses, and one Arabidopsis plant growth house were documented and evaluated (see Appendix A for DPR recording forms). Descriptions of the resources are provided below.



**Figure 5-1 Lath House B and subject plant growth houses.**

### 5.2.1 Lath House B

A lath house is a structure built chiefly of laths or slats spaced so as to reduce excessive sunlight while permitting moderate air circulation and used for growing plants that require some shade and protection from strong winds.

The subject structure is an 11,740 square foot building with a rectangular footprint (Figure 5-2). It rests on a concrete foundation and is supported by steel beams and concrete bearings. It is clad with plastic vertical slats and metal horizontal braces on all façades including the flat roof. The barn style door on the south facing façade is clad of the same materials. A few sections of the north-facing façade have detached from the structure and are in fragmented condition. The interior of the Lath House features concrete walkways with dirt plots for plants. Fragments of wooden beams and benches are scattered throughout the interior. A wood-framed screen house and a metal shed are also located inside the Lath House.



Figure 5-2. Interior of Lath House B, facing east.

### 5.2.2 Associated Plant Growth Structures

These subject structures include two 300-square foot plant growth glass houses (2 & 3), two 208-square foot plant growth glass houses (4 & 5), and one 200-square foot Arabidopsis plant growth house (1) (see Figure 5-1).

Plant growth houses 2 and 3 rest on concrete foundations, have metal frames, and are clad in sealed plastic windows (Figure 5-3). The exterior windows are clad in stucco to provide insulation. They also feature an air filtering system to provide an optimum environment for plant growth. Aluminum-framed, screen-clad entry additions with aluminum doors filter out pests during entry.

Arabidopsis plant growth house 1 rests on a concrete foundation, has a metal frame, and is clad in exposed concrete block on the lower half and sealed plastic windows covered in stucco on the upper half (Figure 5-4). This house features an aluminum-framed, screen-clad entry addition with a wooden door to filter out pests during entry.

Plant growth glass houses 4 and 5 both rest on a concrete foundations, have metal frames, and are clad in exposed concrete block on the lower half and sealed plastic windows on the upper half. They feature wood-framed, screen-clad entry additions with a door to filter out pests during entry (Figure 5-5).



**Figure 5-3. Exterior of plant growth glass houses 2 and 3, facing east.**



**Figure 5-4. Arabidopsis plant growth house 1, facing north.**



**Figure 5-5. Plant growth glass houses 4 and 5, facing north.**

## EVALUATION OF HISTORICAL SIGNIFICANCE

### 6.1 RESOURCE SIGNIFICANCE EVALUATIONS

**Criterion 1.** The subject building and structures (Lath House B, the four plant growth glass houses, and the Arabidopsis plant growth house) are associated with the development and growth of the UCR College of Agriculture and the Citrus Experiment Station. These institutions came together in the 1950s and 1960s and formed the foundation for the world renowned plant science research programs at UCR. Plant growth facilities including lath houses and glass houses were crucial infrastructure needed in plant research and experimentation being undertaken at UCR. CES attracted students from around the world and in 1956 was listed as one of the top 10 best undergraduate colleges in the nation (UCR 2010). For these reasons, Lath House B and the associated plant growth structures are considered historically significant at the state level under Criterion 1. The period of significance is 1956–1965 when the subject building and structures were constructed and when UCR was transitioning into a full-fledged research based University of California campus.

**Criterion 2.** The subject building and structures are not associated with any person(s) of historical significance therefore they are not considered historically significant under Criterion 2.

**Criterion 3.** The subject building and structures convey typical plant growth infrastructure technologies during the twentieth century. There is no evidence they represent a new method of construction, an innovative design, or use of a novel technology. Lath House B and associated structures are not considered historically significant under Criterion 3.

**Criterion 4.** This Criterion is most relevant for archaeological sites, but it can apply to built-environment resources where further study has the potential to yield information that cannot be obtained from other sources. However, historical information about plant growth infrastructure is prevalent, and further study would clearly not add any new information. Lath House B and associated structures are not considered historically significant under Criterion 4.

**Integrity.** This section addresses whether the subject building and associated structures retain sufficient integrity to convey their state historical significance under Criterion 1. This evaluation follows the seven aspects of integrity recommended by the National Park Service: location, setting, association, materials, workmanship, design and feeling (National Park Service 2002).

The **location** of Lath House B is original, but all five of the associated plant growth structures (four plant growth glass houses and the Arabidopsis plant growth house), as shown in Figure 5-1, were moved to their current location sometime after 1965, after the period of significance. Therefore, the plant growth glass houses and the Arabidopsis plant growth house do not retain integrity of **location**. The addition of the plant growth houses after the period of significance has altered the Lath House's integrity of **setting**. The building and structures' **association** with the College of Agriculture and the CES is still conveyed. Sections of Lath House B are fragmented and are in poor condition. Due to the Lath House's lack of maintenance and its current disrepair, as shown in Figure 5-2, the Lath House does not retain integrity of **workmanship, design, and materials**. The plant growth glass houses no longer feature glass windows; they have been

replaced with plastic windows and therefore do not retain integrity of **materials, workmanship, and design**. Integrity of **feeling** is conveyed since these structures are still used for plant growth on campus. In conclusion, Lath House B retains integrity of location, association, and feeling but no longer retains integrity of setting, workmanship, materials and design. The five associated plant growth structures (four plant growth glass houses and the Arabidopsis plant growth house) retain integrity of feeling and association but do not retain integrity of location, setting, workmanship, materials, and design. Overall, Lath House B and associated structures have been significantly altered and do not retain sufficient integrity to convey their significance under Criterion 1 during the 1956–1965 period of significance.

## CONCLUSIONS AND RECOMMENDATIONS

Meeting the 50-year age threshold to be considered historical resources under CEQA, Lath House B and associated plant growth structures were recorded and evaluated for historical significance during the current study. A architectural historian Annie McCausland, M.A. who meets the U.S. Secretary of the Interior's standards and professional qualifications, evaluated the historical significance of this building and structures based on in-depth historical background research and by applying the four criteria of the CRHR and integrity considerations (NPS 2002).

Historical background research on the development, and growth of the University of California Riverside, and the current condition of Lath House B, four plant growth glass houses, and the Arabidopsis plant growth house, has demonstrated that while they do meet Criterion 1 of the CRHR, Lath House B and associated plant growth structures no longer retain integrity of location, setting, workmanship, materials, and design and do not qualify as historical resources according to CEQA.

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1929 Photograph of citrus experiment station lath house.  
  
1948 Citrus Experiment Station aerial photograph.  
  
1952 University of California Riverside aerial photograph.  
  
1959 University of California Riverside aerial photograph.

University of California Riverside, University Archives (continued)

1965 University of California Riverside aerial photograph.

USGS (U.S. Geological Survey)

1942 Riverside, Calif. 15-minute topographic quadrangle (1:62,500).

1953 Riverside East, Calif. 7.5-minute topographic quadrangle (1:24,000).

1967 Riverside East, Calif. 7.5-minute topographic quadrangle (1:24,000).

1980 Riverside East, Calif. 7.5-minute topographic quadrangle (1:24,000).

**APPENDIX A**

**DPR 523 RECORDING FORMS**

Page 1 of 9

Resource Name or #: **Lath House B & associated plant growth structures**

**P1. Other Identifier:**

\*P2. Location: a. County: Riverside

Not for Publication  Unrestricted

b. USGS 7.5' Quad: Riverside East, CA Date 1967 T 2S, R 4W; Section 29 S.B.B.M

c. Address: 900 University Ave, Riverside, CA 92521

d. UTM: NAD, Zone ; 11 S 470146.00 mE / 3759104.00 mN

e. Other Locational Data:

\*P3a. Description: The subject building is a 12,808 sq ft lath house (Lath House B) with a rectangular footprint. It rests on a concrete foundation and is supported by steel beams and concrete bearings. It is clad with plastic vertical slats and metal horizontal braces on all façades including its flat roof. The barn-style door on the south-facing façade is clad with the same materials. A few sections of the north-facing façade have detached from the structure and are fragmented. The interior of the Lath House B features concrete walkways with dirt plots for plants. Fragments of wooden beams and benches are scattered throughout the interior. A wood-framed screen house and a metal shed are also located inside Lath House B (see Continuation Sheet page 2).

\*P3b. Resource Attributes: HP39: lath house and plant growth structures

\*P4. Resources Present:  Building  Structure  Object  Site  District  Element of District  Other:

**\*P5a. Photograph**



**P5b. Description of Photo:** West and south-facing façades looking northeast.

\*P6. Date Constructed/Age and Sources: Constructed in 1956 and 1965  
University of California Riverside  
Department of Architects & Engineers

\*P7. Owner and Address: University of California Riverside  
900 University Ave, Riverside, CA  
92521

\*P8. Recorded By: Annie McCausland  
Applied EarthWorks, Inc.  
Hemet, CA 92544

\*P9. Date Recorded: April 30, 2018

\*P10. Survey Type:  Intensive  
 Reconnaissance  Other  
**Describe:**

\*P11. Report Citation: McCausland, Annie

2018 *Historic Building Assessment: For the University of California Riverside Plant Growth Environments Facility Project in the City of Riverside, Riverside County, California.*

\*Attachments:  NONE  Location Map  Site/Sketch Map  Continuation Sheet  
 Building, Structure, and Object Record  Archaeological Record  District Record  Linear Feature Record  
 Photograph Record  Milling Station Record  Rock Art Record  Artifact Record  
 Other (list):

Continuation       Update

**Description continued:** Associated structures on the property include two 300 square foot plant growth glass houses (2 & 3), two 208 square foot plant growth glass houses (4 & 5), and one 200 square foot Arabidopsis plant growth house (1) Plant growth houses 2 and 3 both rest on concrete foundations, have metal frames, and are clad in sealed plastic windows. The exterior windows are clad in stucco to provide insulation. They also feature an air filtering system to provide an optimum environment for plant growth and aluminum framed, screen clad, entry additions with aluminum doors to filter out pests during entry. Arabidopsis plant growth house 1 rests on a concrete foundation, has a metal frame, and is clad in exposed concrete block on the lower half and sealed plastic windows covered in stucco on the upper half. This house features an aluminum-framed, screen-clad, entry addition with a wooden door to filter out pests during entry. Plant growth houses 4 and 5 both rest on concrete foundations, have metal frames, and are clad in exposed concrete block on the lower half and sealed plastic windows on the upper half. They feature wood-framed, screen-clad entry additions with a door to filter out pests during entry.



**Interior of lath house showing concrete walkways, dirt plots, and wooden benches, facing northeast.**



**Detached siding on north-facing façade of lath house and interior screen house, facing southwest.**



**Exterior of plant growth glass houses 2 and 3, facing east.**



**Arabidopsis plant growth house 1, aluminum-framed entryway, facing south.**



**Arabidopsis plant growth house 1, facing north.**



**Plant growth glass houses 4 and 5, facing north.**

State of California — The Resources Agency  
DEPARTMENT OF PARKS AND RECREATION  
**BUILDING, STRUCTURE, AND OBJECT RECORD**

Primary #  
HRI #/Trinomial

\*NRHP Status Code

Page 6 of 9

Resource Name or #: Lath House B & associated plant growth structures

**B1. Historic Name:**

**B2. Common Name:**

**B3. Original Use:** Plant growth houses

**B4. Present Use:** Same

\***B5. Architectural Style:** N/A

\***B6. Construction History (construction date, alterations, and dates of alterations):** The subject glass houses were constructed in 1956 and moved to their current location sometime after 1965. The subject Lath House B was constructed in its current location in 1965. The subject Arabidopsis plant growth house was constructed in 1965 and moved to its current location sometime after 1965 (University Archives 1965; University of California Riverside Department of Architects & Engineers 2018).

\***B7. Moved?:**  No  Yes  Unknown      Date: After 1965      Original Location: Another area within the UCR campus

\***B8. Related Features:** none

**B9. a. Architect:** unknown

**b. Builder:** unknown

\***B10. Significance:** Theme: n/a

Area: n/a

Period of Significance: n/a

Property Type: n/a

Applicable Criteria: n/a

(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

**Historic Context:** The University of California Riverside (UCR) developed differently from most UC campuses. UCR first opened as an undergraduate liberal arts college in 1954 on the CES Box Springs site. The first campus Provost was Gordon Watkins. He established the College of Letters and Sciences as four divisions instead of departments. The divisions included the humanities, social sciences, physical sciences, and life sciences. Watkins also established a University library and a department of physical education. Webber Hall and Watkins Hall were constructed in 1952 around a large central lawn. The library was constructed in 1953 and in 1954; the new UCR campus was opened. Watkins left UCR in 1956, the same year the campus was listed as one of the top 10 best undergraduate colleges in the nation (UCR 2010). In 1956, the UC Regents reevaluated UCR as an undergraduate liberal arts college. The Regents decided that an undergraduate liberal arts college belonged in the state college system and not the UC system. The UC system was intended for instruction and research. In 1959, UCR was designated a full-fledged University of California campus with graduate programs and professional schools. Herman Theodore Spieth was campus Provost from 1956 to 1964 and oversaw the transition of UCR from a liberal arts college into a UC. He tightened the bond between the CES and UCR by founding the College of Agriculture which combined the work of the CES with undergraduate and graduate teaching. The Graduate Division opened in 1961 with letters, sciences, and agriculture programs attracting students from all over the world. That same year the UC Regents renamed CES, the Citrus research Center and Agricultural Experiment Station (CRC-AES). With the expansion of UCR College of Agriculture and the CES, there was more funding to expand plant growth infrastructure on campus. The mesa area on campus was allocated to the Division of Life Sciences where plant growth facilities including glass houses and lath houses were constructed in the 1950s and 1960s to support the Life Sciences departments including the Department of Horticulture, now known as the Department of Botany and Plant Sciences. The subject glass houses were constructed in 1956 and moved to their current location sometime after 1965. The subject Lath House B was constructed in its current location in 1965. The subject Arabidopsis plant growth house was constructed in 1965 and moved to its current location sometime after 1965 (University Archives 1965; University of California Riverside Department of Architects & Engineers 2018).

**Significance Evaluation: Criterion 1.** The subject building and structures (Lath House B, the four plant growth glass houses, and the Arabidopsis plant growth house) are associated with the development and growth of the University of California Riverside (UCR) College of Agriculture and the Citrus Experiment Station. These institutions came together in the 1950s and 1960s and formed the foundation for the world renowned plant science research programs at UCR. Plant growth facilities including lath houses and glass houses were crucial infrastructure needed in plant research and experimentation at UCR. For these reasons, Lath House B and the associated plant growth structures are considered historically significant at the state level under Criterion 1. The period of significance is 1956–1965 when the subject building and structures were constructed and when UCR was transitioning into a full-fledged research based University of California campus.

**Criterion 2.** The subject building and structures are not associated with any person(s) of historical significance therefore they are not considered historically significant under Criterion 2.

**Significance Evaluation Continued:**

**Criterion 3.** The subject building and structures convey typical plant growth infrastructure technologies during the twentieth century. There is no evidence that they represent a new method of construction, an innovative design, or use of a novel technology. Lath House B and associated structures are not considered historically significant under Criterion 3.

**Criterion 4.** This Criterion is most relevant for archaeological sites, but it can be applied to built-environment resources if further study has the potential to yield information that cannot be obtained from other sources. However, historical information about plant growth infrastructure is prevalent, and further study would clearly not add any new information. Lath House B and associated structures are not considered historically significant under Criterion 4.

**Integrity.** This section addresses whether the subject building and associated structures retain sufficient integrity to convey their state historical significance under Criterion A/1. This evaluation follows the seven aspects of integrity described by the National Park Service: location, setting, association, materials, workmanship, design and feeling (National Park Service 2002).

The **location** of Lath House B is original, but all five of the associated plant growth structures (four plant growth glass houses and the Arabidopsis plant growth house), were moved to their current location sometime after 1965, after the period of significance. Therefore, the plant growth glass houses and the Arabidopsis plant growth house do not retain integrity of **location**. The addition of the plant growth houses after the period of significance has altered the Lath House's integrity of **setting**. The building and structures' **association** with the College of Agriculture and the CES is still conveyed. Sections of Lath House B are fragmented and are in poor condition. Due to the Lath House's lack of maintenance and its current disrepair, the Lath House does not retain integrity of **workmanship, design, and materials**. The plant growth glass houses no longer feature glass windows; they have been replaced with plastic windows and therefore do not retain integrity of **materials, workmanship, and design**. Integrity of **feeling** is conveyed since these structures are still used for plant growth on campus. In conclusion, Lath House B retains integrity of location, association, and feeling but no longer retains integrity of setting, workmanship, materials and design. The five associated plant growth structures (four plant growth glass houses and the Arabidopsis plant growth house) retain integrity of feeling and association but do not retain integrity of location, setting, workmanship, materials, and design. Overall, Lath House B and associated structures have been significantly altered and do not retain sufficient integrity to convey their significance under Criterion 1 during the 1956–1965 period of significance.

**B11. Additional Resource Attributes (list attributes and codes):**

**\*B12. References:**

NETROnline

2016 Historic aerial photographs dated 1967, 1978, 1980, 1994, 2002, 2005, 2009, 2010 and 2012. Found at: <http://www.historicaerials.com>.

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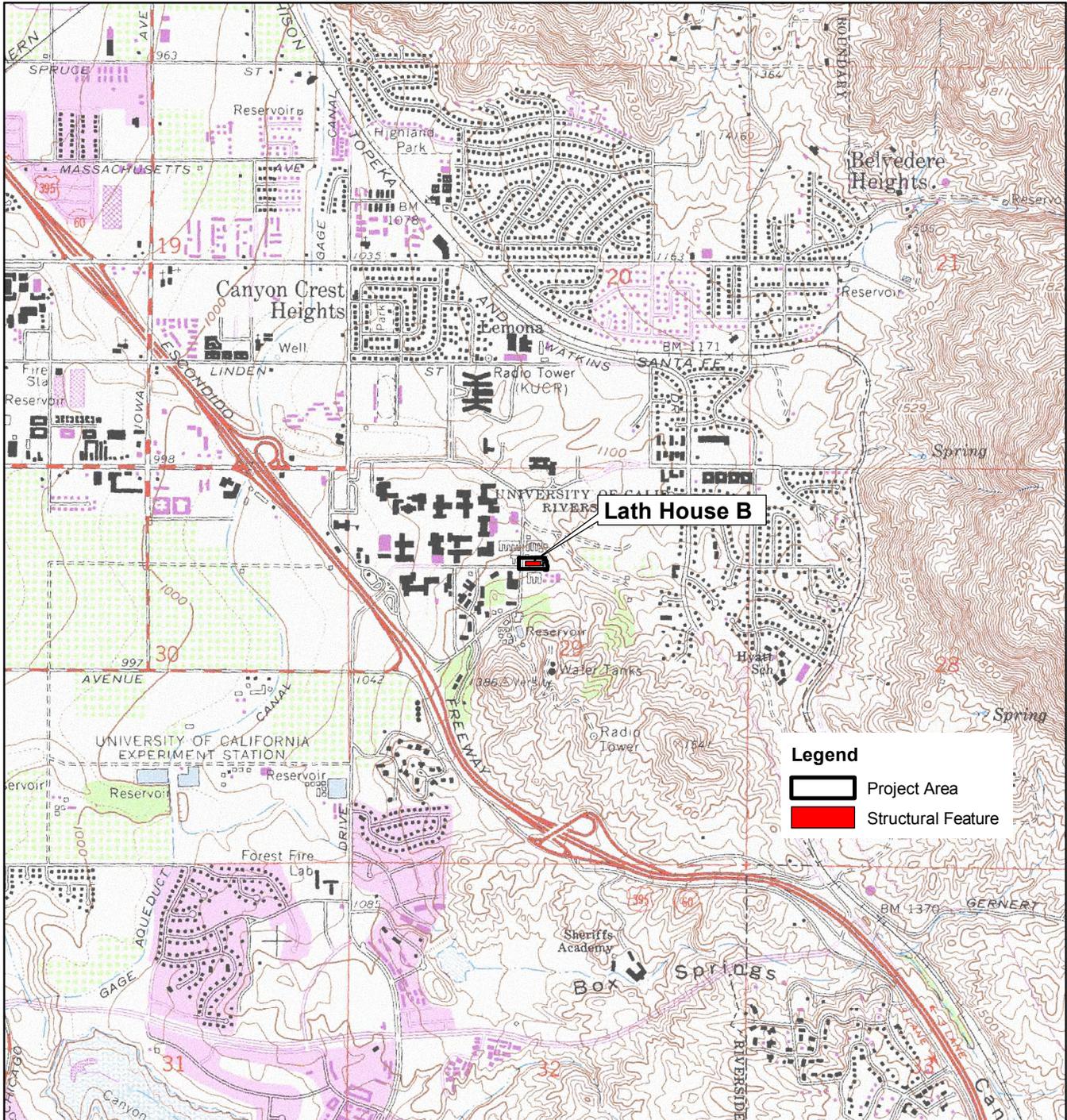
1965 University of California Riverside aerial photograph

**B13. Remarks:**

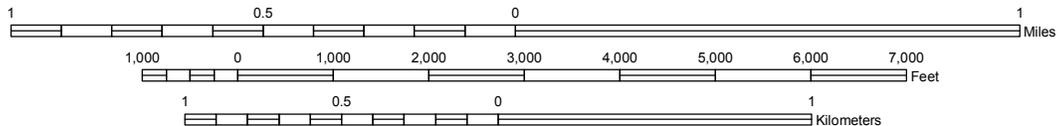
**\*B14. Evaluator:** Annie McCausland, M.A.,  
Applied EarthWorks, Inc., Hemet, CA 92544  
**Date of Evaluation:** June 2018

This space reserved for official comments.





SCALE 1:24,000



TRUE NORTH

**Appendix D**  
**Cultural Resource Constraints**  
**Analysis**

July 3, 2018 (Updated December 5, 2018)

Ms. Stephanie Tang  
Senior Environmental Analyst  
Albert A. Webb Associates  
3788 McCray Street  
Riverside, CA 92506  
Transmitted via email to [stephanie.tang@webbassociates.com](mailto:stephanie.tang@webbassociates.com)

**Re: Cultural Resource Constraints Analysis for the University of California Riverside Plant Growth Environments Facility (PGEF), Riverside County, California**

Dear Ms. Tang,

This letter, prepared by Applied EarthWorks, Inc. (Æ) summarizes the results of the cultural resource constraints analysis for the University of California Riverside Plant Growth Environments Facility Project (PGEF, Project), located on East Campus Drive, east of the intersection with Eucalyptus Drive. The Project site is currently developed with Lath House B, four plant growth glass houses, one Arabidopsis plant growth house, a temporary compost toilet, and a metal shed totaling 13,106 square feet. The proposed Project would involve the demolition of all the facilities on site, removal of existing landscape along the northern and southern portion of the site, and removal of associated pavement for the construction of a 2-story, approximately 38,000 square foot PGEF, one Americans with Disabilities (ADA) accessible parking space, a hammerhead driveway, and associated on-site improvements (Figure 1, Project Location and Figure 2, Site Plan). There are no off-campus modifications associated with the proposed Project.

**Cultural Resource Literature and Records Search Results**

An archaeological literature and records search was conducted at the Eastern Information Center (EIC) of the California Historical Resource Information System (CHRIS), housed at the University of California, Riverside, on April 26, 2018. The objective of the records search was to determine whether or not any of the buildings and structures on the subject site, or within the immediate Project vicinity, had been previously documented as a historical resource. The scope of the records search included the Project area and all the land within the subject site and immediate surroundings. Sources consulted during the historic resource literature and records search include Department of Parks and Recreation (DPR) 523 recording forms and historic resource location maps, the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the OHP Directory of Properties in the Historic Property Data File, and the listing of California Historical Landmarks and California Points of Historical Interest. The results of the records search indicate that no previous historic resource surveys have been conducted within close proximity of the Project area. One cultural resource, the Citrus Experiment Station, was identified 0.8 miles southwest of the Project. This resource was designated a California Historic Point of Interest in 1969. The Project will not affect the integrity of the Citrus Experiment Station because it is located well outside of the proposed Project limits. None of the subject buildings within the Project area have been previously recorded in the CHRIS.

USGS maps were also consulted during the background research and included the Riverside, Calif. 1:62,500 scale quadrangle dated 1942; the Riverside East, Calif. 1:24,000 scale quadrangle dated 1953; the Riverside East, Calif. 1:24,000 scale quadrangle of 1967; and the Riverside East, Calif. 1:24,000 scale quadrangle of 1980. Historical aerials from NETROnline (2016) dated 1967, 1978, 1980, 1994, 2002, 2005, 2009, 2010, and 2012 as well as aerials from the UCR University Archives dated 1948, 1952, 1959, and 1965 were reviewed. No buildings, structures, or features of interest are visible within the Project site prior to 1965.



### **Field Visit**

Æ conducted a field inspection of the Project area on April 26, 2018. The survey consisted of pedestrian transects across the Project area, and individual inspection of each building and structure found on the Project site.

The field inspection revealed that very little undisturbed land is present within the Project area. The ground surface is obscured throughout most of the area by hardscape that includes paved parking lots. The small portions of the Project that lacked hardscape are characterized by landscaping around the perimeter of the Project. The areas immediately north, west, and south of the Project are developed and contain various University buildings. The area east of the Project contains no buildings or structures and appears to be intact. Field documentation consisted of general observations and digital photography.

### **Management Recommendations**

The records search has indicated that no archaeological studies have previously occurred within the Project area, so the presence or absence of archaeological deposits in this area is as yet unknown. However, the majority of the Project area is obscured by structures, pavement, and landscaping, so the potential to find intact buried deposits within the entire Project area is low. It should be noted that the open space/arroyo to the east of the Project appears to be intact. Therefore, if the Project is expanded to include this area, a complete cultural resource study of the property is recommended.

UCR would implement the following Planning Strategies (PSs) Open Space 3 and PS Conservation 2 for the Project:

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 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.

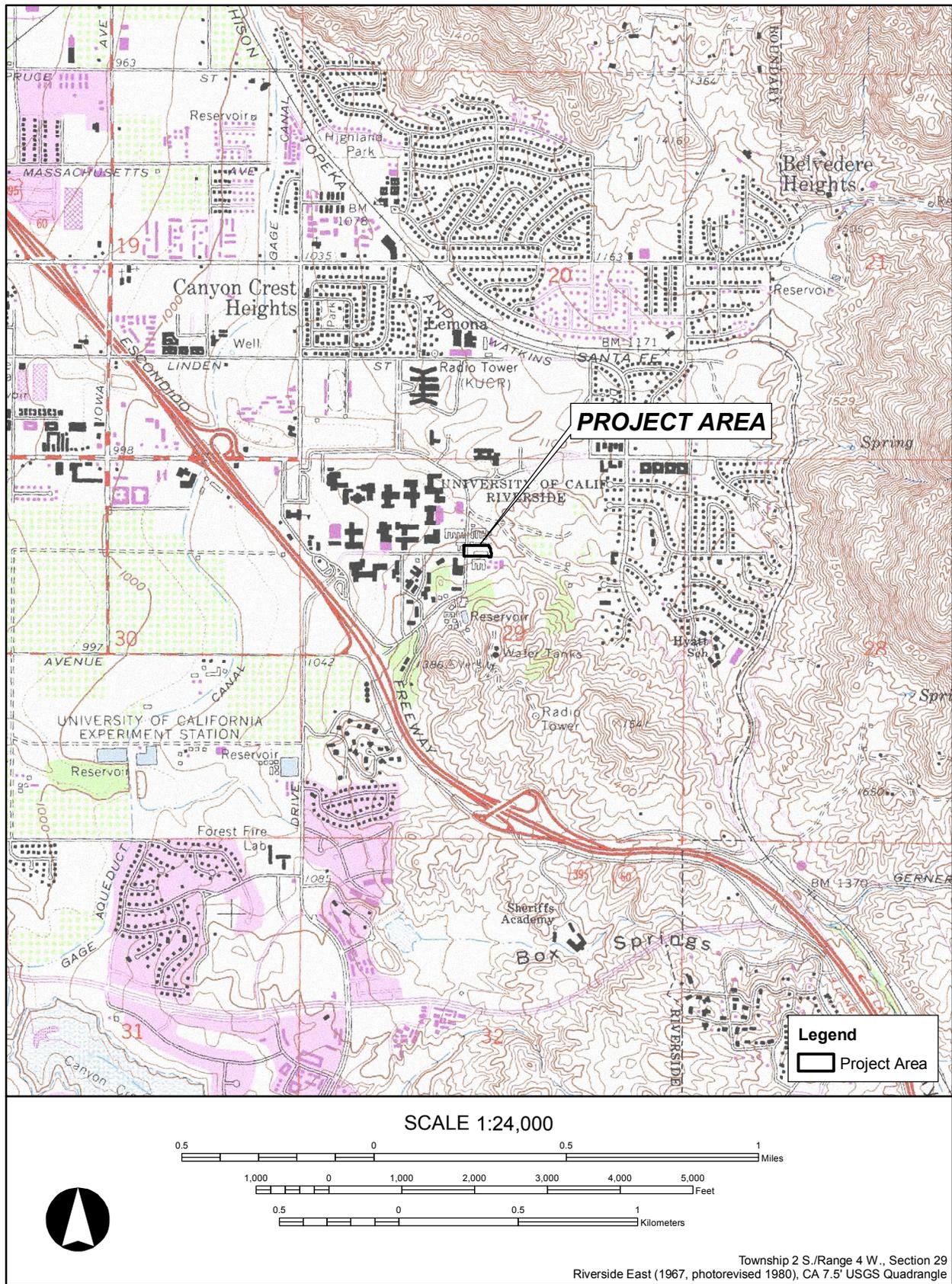
In addition, the following Program and Practices (PPs) from the UCR 2005 Long Range Development Plan (LRDP) would be implemented for the Project:

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.

If you have any questions or concerns regarding the information provided above, please feel free to contact me at (951) 766-2000.

Best regards,

Joan George  
Associate Archaeologist  
Applied EarthWorks, Inc.



**Figure 1 Project location map.**



**Figure 2** Site plan showing Lath House B and subject plant growth houses.

**Appendix E**  
**Geotechnical Data Report**

# Geotechnical Data Report

## Greenhouse Replacement Project No. 1

### University of California, Riverside

### Riverside, California

University of California, Riverside  
1223 University Avenue, Suite 240 | Riverside, California 92507

September 18, 2017 | Project No. 210241001



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

**Ninyo & Moore**

Geotechnical & Environmental Sciences Consultants

# Geotechnical Data Report

## Greenhouse Replacement Project No. 1

### University of California, Riverside

### Riverside, California

Mr. Clifford Stokes

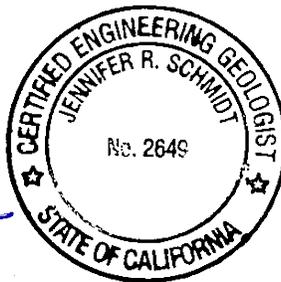
University of California, Riverside

1223 University Avenue, Suite 240 | Riverside, California 92507

September 18, 2017 | Project No. 210241001



**Jennifer R. Schmidt, PG, CEG**  
Senior Project Geologist



**Kurt S. Yoshii, PE, GE**  
Principal Engineer



AES/JRS/CAP/KSY/mlc

Distribution: (1) Addressee (via e-mail)

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# 1 INTRODUCTION

In accordance with your request and authorization, we have performed a limited geotechnical evaluation for the planned construction of a new greenhouse building in the East Campus area of the University of California, Riverside (Figure 1). The purpose of our work was to collect field and laboratory data from two alternative site locations for the proposed new greenhouse building (Northern Alternative and Southern Alternative). We understand that this data will be provided to design-build teams by University of California, Riverside. This report presents the findings from our subsurface exploration and geotechnical laboratory testing.

## 2 SCOPE OF SERVICES

Our scope of geotechnical services included the following:

- Project coordination and planning, including scheduling the subsurface exploration.
- Review of readily available background material, including pertinent published geologic maps, topographic maps, regional fault maps, groundwater data, and preliminary conceptual plans provided by the client.
- Site reconnaissance to observe and document the existing surficial geologic conditions of the site and to mark our proposed exploratory boring locations for clearance by Underground Service Alert.
- Subsurface evaluation consisting of the drilling and sampling of seven small-diameter borings. The borings were drilled to depths ranging from approximately 21½ to 50½ feet below the ground surface. The borings were logged by a representative of our firm, and bulk and relatively undisturbed samples were obtained at selected intervals for laboratory testing.
- A seismic survey consisting of three P-wave refraction seismic lines on the slope at the Southern Alternative site.
- Geotechnical laboratory testing of representative soil samples, including tests to evaluate in-situ moisture content and dry density, gradation analysis, shear strength, and soil corrosivity.
- Analytical laboratory testing to evaluate the presence of Organochlorine Pesticides and Title 22 Metals.
- Agronomy testing of representative soil samples to evaluate fertility, agricultural suitability, and United States Department of Agriculture particle size for new project landscaping.
- Data compilation of field and laboratory data.
- Preparation of this data report presenting a site plan with boring locations, borings logs, laboratory test results, and geophysical survey results.

## 3 SITE DESCRIPTION AND PROPOSED CONSTRUCTION

The project sites are located in the East Campus area of the University of California, Riverside. There are two proposed locations for the new greenhouse building, the Northern Alternative site

and the Southern Alternative site (Figures 1 and 2). The Northern Alternative site is located east of the East Campus Drive and Eucalyptus Drive intersection and is bound by East Campus Drive to the west, a lathhouse to the north, undeveloped land to the east, and existing greenhouses to the south. The majority of the Northern Alternative site is occupied by an existing lathhouse, some smaller greenhouse buildings, and an asphalt-paved access road. The topography of the Northern Alternative site is relatively flat with an approximate elevation of 1,110 feet above mean sea level (MSL).

The Southern Alternative site is located approximately 250 feet south of the East Campus Drive and Eucalyptus Drive intersection and is bound by East Campus Drive on the west, existing greenhouse buildings on the north, the Computing and Communications Center building to the east and a fruit, olive, and almond orchard to the south. The northern half of the Southern Alternative site is located on an existing asphalt-paved parking lot. The southern half of the site extends into an approximate 3:1 (horizontal to vertical) slope and a portion of the existing orchard. The slope and orchard are moderately vegetated with plants and trees. The topography of the Southern Alternative site is relatively flat in the parking lot area with a ground surface elevation of approximately 1,140 feet above MSL (United States Geology Survey [USGS], 2015). The slope within the project area is approximately 35 feet high and ascends to the south up to approximately 1,175 feet above MSL (Rick Engineering Company, 2017).

We understand that the project includes design and construction of a one- to two-story, at-grade structure with greenhouse areas and office space. The Northern Alternative site will involve limited grading for an at-grade structure. However, the Southern Alternative site is anticipated to involve cuts into the existing orchard slope up to approximately 23 feet in order to construct the greenhouse building pad and to lay the adjacent slope back at a 2:1 (horizontal to vertical) angle.

## **4 SUBSURFACE EXPLORATION AND LABORATORY TESTING**

Our subsurface evaluation was conducted on August 8 and 9, 2017, and included the excavation, sampling, and logging of seven hollow-stem auger borings to depths ranging from approximately 21½ to 50½ feet below the ground surface. Borings B-1 through B-4 were drilled at the Southern Alternative site, and Borings B-5 through B-7 were drilled at the Northern Alternative site (Figure 2). The borings were drilled using truck-mounted drilling equipment and were logged and sampled by a representative of our firm. Bulk and relatively undisturbed soil samples were collected at selected depths for laboratory testing. The borings were backfilled with on-site soils and the paved surfaces were patched with rapid-set concrete. The

approximate locations of the borings are shown on Figure 2. Logs of the exploratory borings are presented in Appendix A.

Geotechnical laboratory testing of representative soil samples was performed to evaluate in-situ moisture content and density, gradation analysis, direct shear strength, and soil corrosivity. The results of the in-situ moisture content and density tests are presented on the boring logs in Appendix A. The remaining laboratory test results are presented in Appendix B.

Analytical laboratory testing of representative soil samples was performed on near-surface soil samples at depths ranging from approximately 0 to 2½ feet below the ground surface. The soil samples were analyzed for Organochlorine Pesticides and Title 22 Metals. The analytical laboratory test results are presented in Appendix C.

Agronomy testing of representative soil samples was performed to evaluate fertility, agricultural suitability, and United States Department of Agriculture particle size for new project landscaping. The analytical results are presented in Appendix D.

## **5 GEOLOGY AND SUBSURFACE CONDITIONS**

### **5.1 Regional Geology**

The proposed project is located within the Riverside Basins, which is part of the Peninsular Ranges geomorphic province of southern California (Norris and Webb, 1990). The geomorphic province encompasses an area that extends approximately 125 miles from the Transverse Ranges and the Los Angeles Basin south to the Mexican border and the tip of Baja California. The Peninsular Ranges province is characterized by generally northwest-trending mountain ranges and structural basins separated by sub-parallel fault zones. In general, the mountain ranges are underlain by Jurassic-age metavolcanic and metasedimentary rocks and Cretaceous-age igneous rocks of the southern California batholith.

### **5.2 Site Geology**

The project sites are located within the northern portion of the south Riverside Basin, west of Box Springs Mountain Park and southeast of the northeast-southwest trending Santa Ana River (City of Riverside, 2013). Regional geologic maps (Figure 3) indicate that the sites are underlain by early to middle Pleistocene-age alluvial fan deposits consisting of moderately to well consolidated sand, silt, gravel, and conglomerate (Dibblee, 2003; Morton, 2006). The hills to the south of the project area and adjacent to the Southern Alternative site consist of Cretaceous-age Val Verde Tonalite, a plutonic bedrock. Our review of geologic literature indicates that the site is not underlain by mapped landslides.

### **5.2.1 Northern Alternative Site**

Materials encountered at the Northern Alternative site generally consisted of asphalt concrete (AC), alluvium, and Val Verde Tonalite. Borings B-5 through B-7 were located along the AC access road around the existing lathhouse at the Northern Alternative site (Figure 2). The AC was approximately 2 inches thick in boring B-5 and approximately 1½ inches thick in borings B-6 and B-7.

Alluvium was encountered below the AC to a depth of approximately 43 feet in boring B-6 and to the total depths explored of 31½ and 21½ feet in borings B-5 and B-7, respectively. The alluvium generally consisted of moist, medium dense to very dense, clayey sand and silty sand. An approximate 1-foot-thick layer of firm, sandy clay was encountered in boring B-5 from approximately 2 to 3 feet below the ground surface.

Val Verde Formation was encountered below the alluvium in boring B-6 to the total depth explored of approximately 51½ feet. The Val Verde Formation generally consisted of damp, weathered, tonalite plutonic rock. More detailed descriptions of the subsurface materials encountered at the Northern Alternative site are presented on the boring logs in Appendix A.

### **5.2.2 Southern Alternative Site**

Materials encountered at the Southern Alternative site generally consisted of AC pavement sections, fill soils, alluvium, and Val Verde Tonalite. Borings B-1 and B-2 were located on the slope in the existing orchard area and borings B-3 and B-4 were located in the existing parking lot at the Southern Alternative site (Figure 2). The pavement sections encountered in the parking lot consisted of approximately 4 inches of AC over approximately 5 inches and 26 inches of aggregate base in borings B-3 and B-4, respectively.

Fill soils were encountered at the ground surface in borings B-1 and B-2 to a depth of approximately 1 foot below the ground surface and below the pavement sections in borings B-3 and B-4 to a depth of approximately 1½ and 2 feet below the ground surface, respectively. The fill soils generally consisted of moist, medium dense, clayey sand.

Alluvium was encountered below the fill in borings B-1 through B-4 to depths ranging from approximately 3 to 20 feet below the ground surface. The alluvium generally consisted of moist, loose to very dense, clayey sand. An approximate 1-foot-thick layer of hard clay was encountered in boring B-3 from approximately 2 to 3 feet below the ground surface.

Val Verde Formation was encountered below the alluvium in borings B-1 through B-4 to the depths explored of up to approximately 50½ feet below the ground surface. The Val Verde

Formation generally consisted of damp, weathered, tonalite plutonic rock. Drilling refusal due to hard bedrock conditions was met at approximately 23 feet below the ground surface in boring B-2. More detailed descriptions of the subsurface materials encountered at the Southern Alternative site are presented on the boring logs in Appendix A.

## **6 GROUNDWATER**

Groundwater was not encountered in our borings at the Northern Alternative site. Groundwater was encountered in boring B-3 at the Southern Alternative site at a depth of approximately 45 feet below the ground surface. Regional maps indicate that groundwater level in the project area is approximately 95 feet below the ground surface (City of Riverside, 2011). It should be noted that fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, rainfall, irrigation practices, groundwater pumping, and other factors which may not have been evident at the time of our field evaluation.

## **7 RIPPABILITY**

In order to evaluate the rippability of the bedrock materials expected to be encountered during grading of the Southern Alternative site, we performed three seismic refraction profiles. The seismic refraction profiles were performed in the existing orchard area where cuts for a building pad and a 2:1 (horizontal to vertical) graded slope are anticipated (Figure 2). The profiles were performed using a 24-channel, digital seismograph with a 12-pound hammer impacting a steel plate as the energy source. A real-time noise monitor showing the geophones was checked during the survey to monitor noise levels from nearby traffic and other sources.

The modeled bedrock velocities indicated by our seismic profiles and the interpreted rippability characteristics are presented in Table 1. Cross sections of the profiles are presented in Appendix E.

**Table 1 – Bedrock Velocities and Rippability Characteristics**

Profile	Depth (feet)	Velocity (feet/second)	Geologic Unit	Rippability
Line 1 West Side	0 - 10	0 to 3,000	Alluvium/Val Verde	Easy to Moderate
	10 - 15	3,000 to 4,000	Val Verde	Moderate
	15 - 35	4,000 to 6,000	Val Verde	Difficult
Line 1 East Side	0 - 2	0 to 2,500	Alluvium	Easy
	2 - 5	2,500 to 4,000	Val Verde	Moderate
	5 - 35	4,000 to 6,000	Val Verde	Difficult
Line 2	0 - 5	0 to 3,000	Alluvium/Val Verde	Easy to Moderate
	5 - 10	3,000 to 4,000	Val Verde	Moderate
	10 - 30	4,000 to 6,000	Val Verde	Difficult
Line 3	0 - 5	0 to 3,000	Alluvium/Val Verde	Easy to Moderate
	5 - 10	3,000 to 4,000	Val Verde	Moderate
	10 - 30	4,000 to 5,000	Val Verde	Difficult

Based on the results of our seismic refraction survey, excavation difficulty into the Val Verde Tonalite will be variable across the hillside and will range from moderate to difficult. In general, it is anticipated that the majority of excavations will be rippable utilizing heavy earthmoving equipment in good working order. The rippability characteristics are based on our experience with similar materials and are correlated to a Caterpillar D-9 dozer, or equivalent, with a single-shank ripper. We emphasize that the cutoffs in the above classification scheme are approximate and that rock characteristics, such as fracture spacing and orientation, play a significant role in rock rippability. Rippability will also be dependent on the excavation equipment used and the skill and experience of the equipment operator.

## 8 FAULTING AND SEISMICITY

The project site is not located within a State of California Earthquake Fault Zone (formerly known as an Alquist-Priolo Special Studies Zone) (Hart and Bryant, 2007). The site is located in a seismically active area, as is the majority of southern California, and the potential for strong ground motion in the project area is considered significant during the design life of the proposed improvements. Figure 4 shows the approximate site location relative to the principal active faults in the region.

Table 2 lists selected principal known active faults that may affect the project site, the maximum moment magnitude ( $M_{max}$ ), and the calculated approximate fault-to-site distances using the USGS fault database (USGS, 2008).

**Table 2 – Principal Active Faults**

Fault	Approximate Fault to Site Distance miles (kilometers)	Maximum Moment Magnitude (M <sub>max</sub> )
San Jacinto	5.8 (9.3)	7.9
San Andreas	13.6 (21.9)	8.2
Cucamonga	15.9 (25.5)	6.7
Elsinore	16.9 (27.1)	7.9
Chino	17.3 (27.8)	6.8
Cleghorn	21.1 (33.9)	6.8
San Jose	23.3 (37.5)	6.7
North Frontal	24.0 (38.7)	7.2
Sierra Madre	26.2 (42.1)	7.3
Puente Hills Blind Thrust	31.7 (51.1)	6.9
San Joaquin Hills Blind Thrust	32.6 (52.5)	7.1

Principal seismic hazards typically associated with seismic activity are surface ground rupture, ground shaking, seismically induced liquefaction, and various manifestations of liquefaction-related hazards (e.g., dynamic settlement and lateral spreading). A brief description of these hazards and the potential for their occurrences at the project locations are discussed below.

### 8.1 Surface Ground Rupture

Based on our review of the referenced literature and our geologic reconnaissance, no active faults are known to cross the subject site. Therefore, the probability of damage from surface fault rupture is considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

### 8.2 Ground Motion

The 2016 California Building Code (CBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCE<sub>R</sub>) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE<sub>R</sub> ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal peak ground acceleration that corresponds to the MCE<sub>R</sub> for the site was calculated as 0.60g using the USGS (USGS, 2017) seismic design tool (web-based).

### 8.3 Liquefaction Potential

Liquefaction is the phenomenon in which loosely deposited granular soils with silt and clay content of less than approximately 35 percent and non-plastic silts located below the water table

undergo rapid loss of shear strength due to development of excess pore pressure during strong earthquake-induced ground shaking. Ground shaking of sufficient duration results in the loss of grain-to-grain contact due to rapid rise in pore water pressure and it eventually causes the soil to behave as a fluid for a short period of time. Liquefaction is known generally to occur in saturated or near-saturated cohesionless soils at depths shallower than 50 feet below the ground surface. Factors known to influence liquefaction potential include composition and thickness of soil layers, grain size, relative density, groundwater level, degree of saturation, and both intensity and duration of ground shaking.

The site is located in an area mapped as having a low susceptibility for seismically induced liquefaction in deep groundwater susceptible sediments (County of Riverside, 2017). Based on the Riverside County liquefaction susceptibility map and the relatively deep groundwater level at the site, it is our opinion that liquefaction and liquefaction-related seismic hazards are not a design consideration for this project.

## **9 CORROSION**

Laboratory testing was performed on four representative samples of near-surface soils to evaluate soil pH, electrical resistivity, water-soluble chloride content, and water-soluble sulfate content. The soil pH and electrical resistivity tests were performed in general accordance with California Test Method (CT) 643. Chloride content tests were performed in general accordance with CT 422. Sulfate testing was performed in general accordance with CT 417. The laboratory test results are presented in Appendix B.

Soil pH values ranged from 7.2 to 7.7 for the tested soil samples. The electrical resistivity ranged from approximately 1,112 to 16,275 ohm centimeters. The chloride content of the soil samples ranged from approximately 25 to 80 parts per million (ppm), and the water-soluble sulfate content ranged from approximately 0.002 to 0.015 percent (20 to 150 ppm, respectively). Based on the laboratory test results and California Department of Transportation (Caltrans, 2012) corrosion criteria, the project site can be classified as a non-corrosive site, which is defined as having earth materials with less than 500 ppm chlorides, less than 0.20 percent sulfates (i.e., 2,000 ppm), a pH of 5.5 or more, and an electrical resistivity of more than 1,000 ohm cm.

## **10 CONCRETE PLACEMENT**

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical and/or physical deterioration. Based on the CBC criteria (2016) and American Concrete Institute (ACI) criteria (ACI, 2016), the potential for sulfate attack is

negligible for water-soluble sulfate contents in soil ranging less than 1,000 ppm. As indicated above, the soil samples tested for this evaluation indicate water-soluble had sulfate contents ranging from 20 to 150 ppm. Accordingly, the on-site soils are considered to have a negligible potential for sulfate attack. Due to the potential variability in soil conditions across the site and the possible use of reclaimed water, we recommend that Type V cement be considered for the project.

## **11 LIMITATIONS**

The preliminary geotechnical evaluation presented in this report has been conducted in general accordance with current practice and the standard of care exercised by reputable geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the information presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for preliminary geotechnical informational purposes only. It does not provide sufficient data for design. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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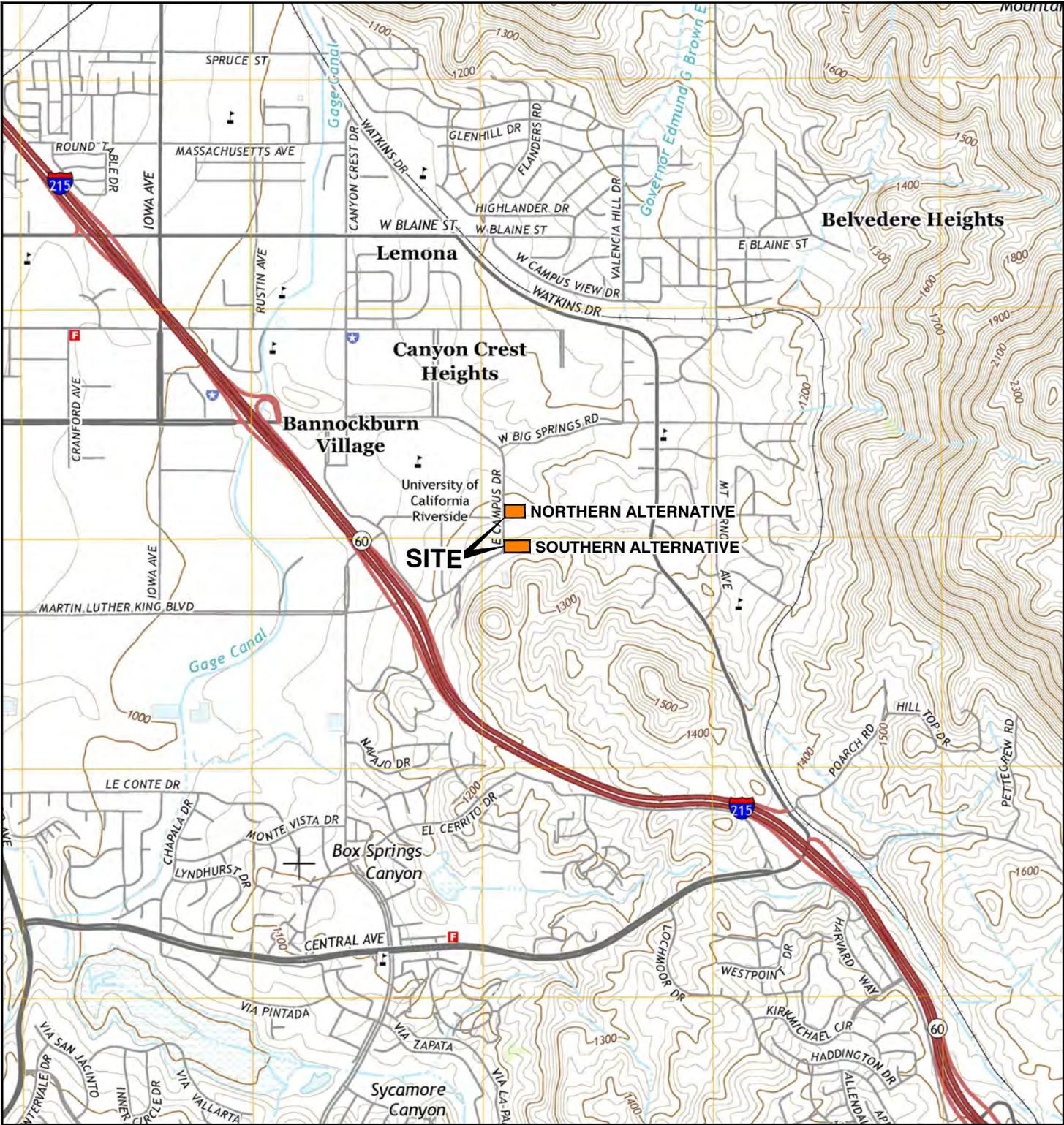
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# FIGURES



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NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. | REFERENCE: USGS, 2015.

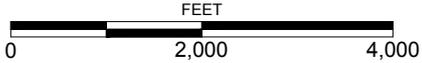
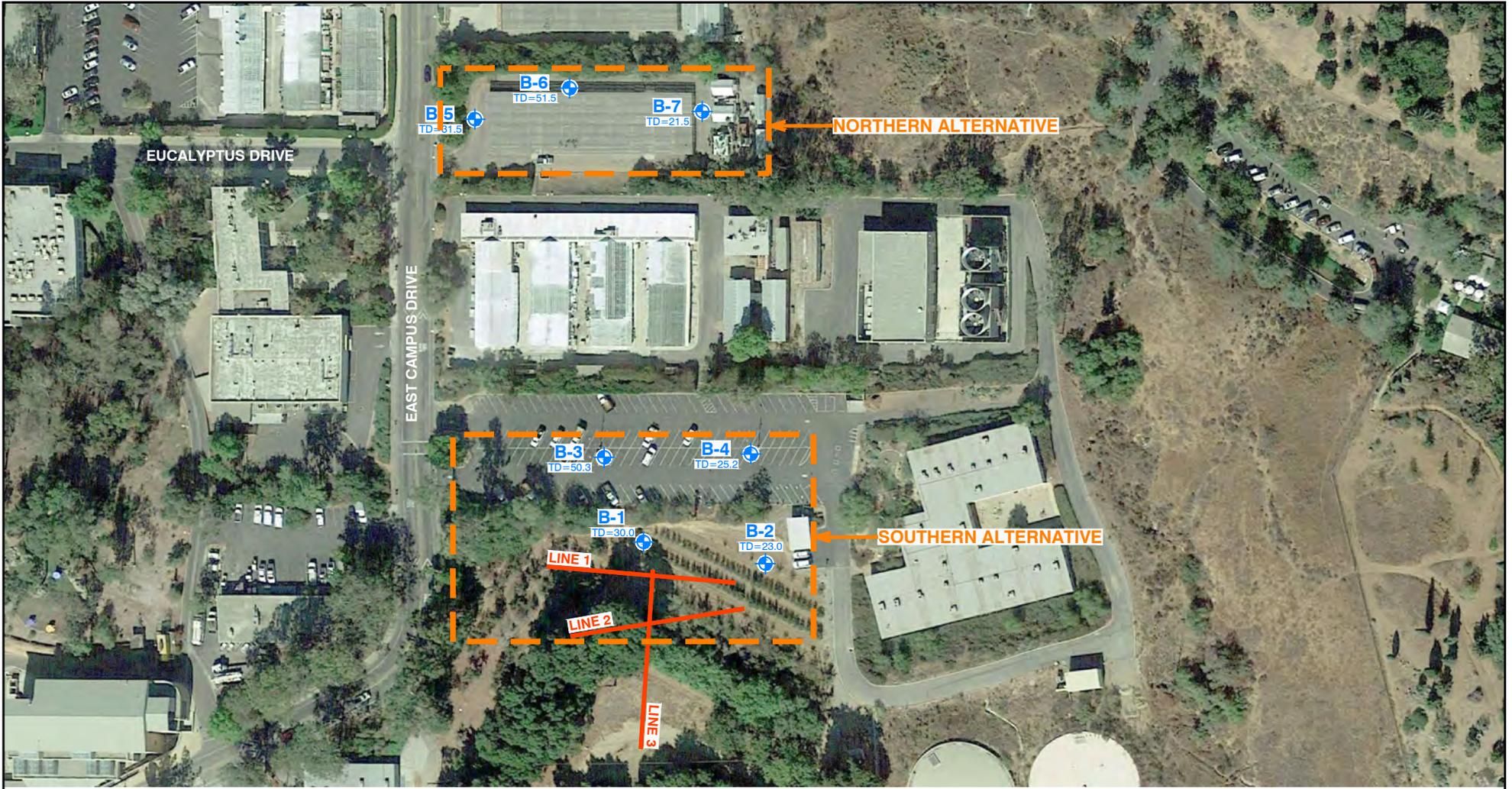


FIGURE 1



**LEGEND**

**B-7**  BORING;  
 TD=21.5 TD=TOTAL DEPTH IN FEET

**LINE 3**  SEISMIC REFRACTION LINE

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. | REFERENCE: GOOGLE EARTH, 2017.

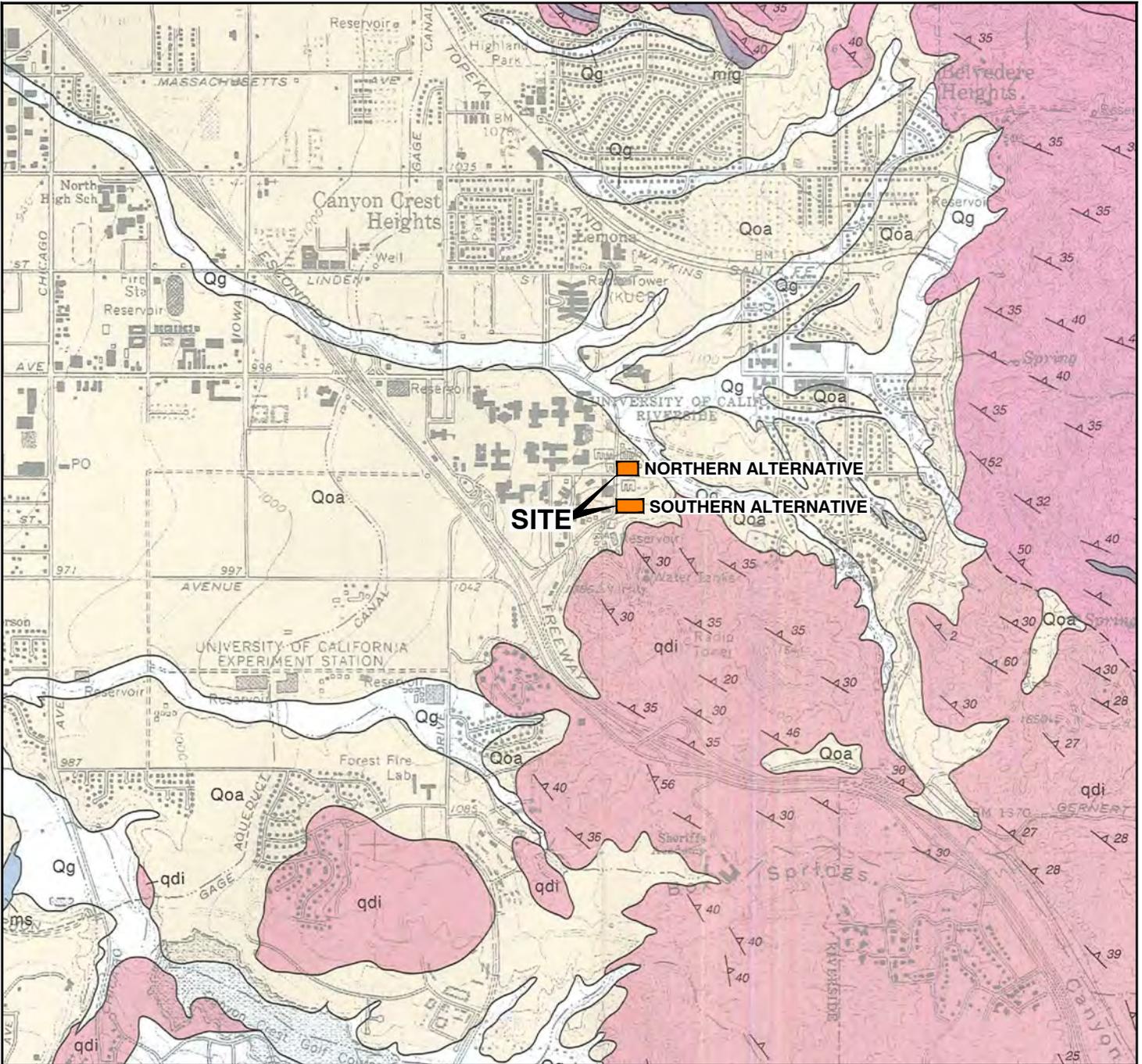


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**FIGURE 2**

**BORING AND SEISMIC LINE LOCATIONS**

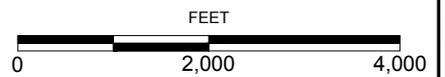
GREENHOUSE REPLACEMENT PROJECT NO. 1  
 UNIVERSITY OF CALIFORNIA, RIVERSIDE  
 RIVERSIDE, CALIFORNIA  
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**LEGEND**

- Qg** ALLUVIAL STREAM CHANNEL DEPOSITS
- Qoa** OLDER ALLUVIAL FAN DEPOSITS
- qdi** VAL VERDE TONALITE
- GEOLOGIC CONTACT
- STRIKE AND DIP OF ROCK FOLIATION

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. REFERENCE: THOMAS DIBBLEE, JR., 2003.

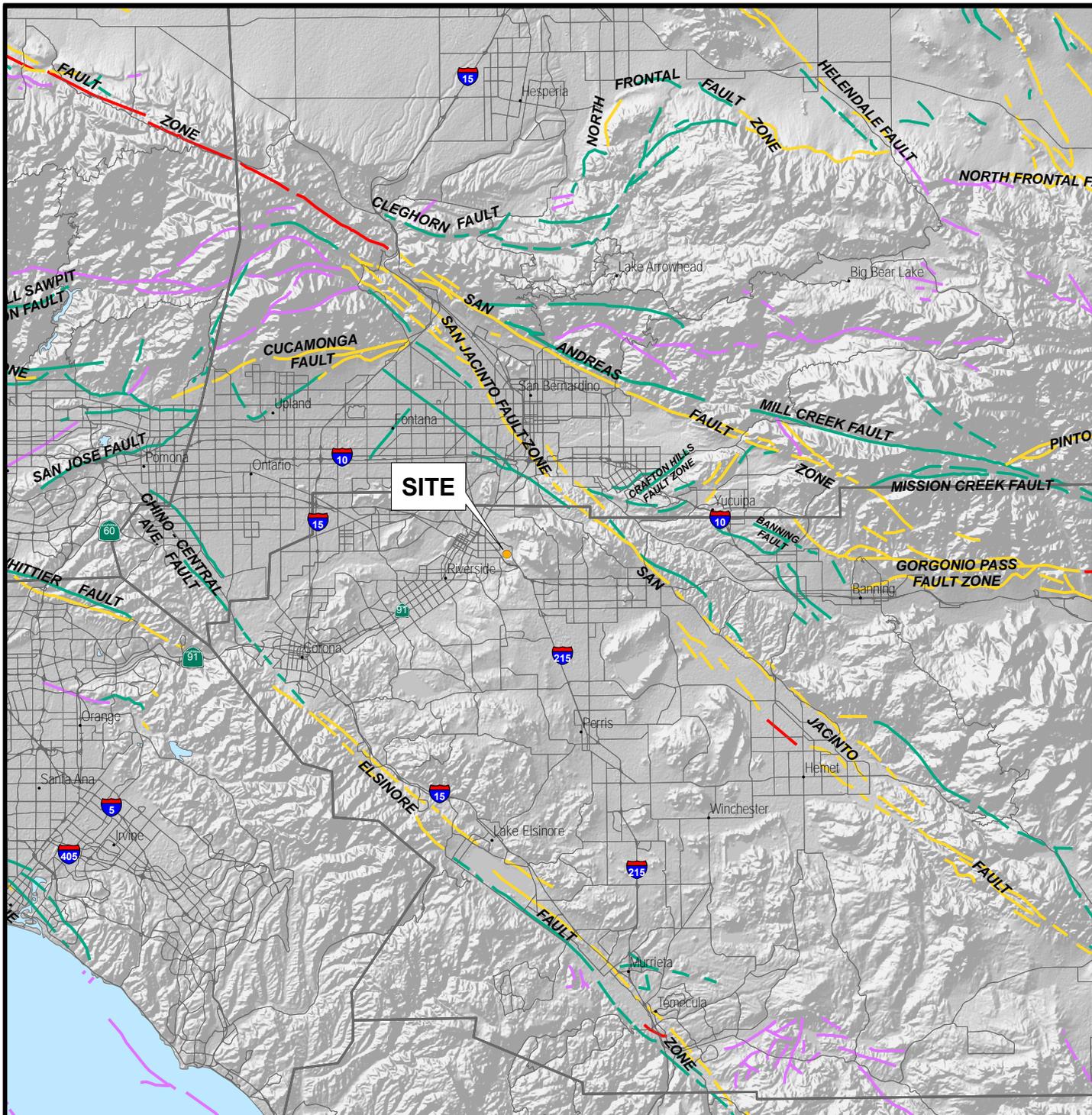


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**FIGURE 3**

**REGIONAL GEOLOGY**

GREENHOUSE REPLACEMENT PROJECT NO. 1  
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 RIVERSIDE, CALIFORNIA  
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GIS DATA SOURCE: CALIFORNIA GEOLOGICAL SURVEY (CGS); ENVIRONMENTAL SYSTEMS RESEARCH INSTITUTE (ESRI)

**LEGEND**

**FAULT ACTIVITY:**

- HISTORICALLY ACTIVE
- HOLOCENE ACTIVE
- COUNTY BOUNDARIES
- LATE QUATERNARY
- QUATERNARY



**FIGURE 4**

**FAULT LOCATIONS**

GREENHOUSE REPLACEMENT PROJECT NO. 1  
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 210241001 | 9/17



# APPENDIX A

## Boring Logs

# APPENDIX A

## BORING LOGS

### **Field Procedure for the Collection of Disturbed Samples**

Disturbed soil samples were obtained in the field using the following methods.

#### **Bulk Samples**

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

#### **The Standard Penetration Test (SPT) Sampler**

Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test spoon sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1 <sup>3</sup>/<sub>8</sub> inches. The spoon was driven into the ground 18 inches with a 140-pound hammer free falling from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the spoon, bagged, sealed and transported to the laboratory for testing.

### **Field Procedure for the Collection of Relatively Undisturbed Samples**

Relatively undisturbed soil samples were obtained in the field using the following method.

#### **The Modified Split-Barrel Drive Sampler**

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sampler barrel was driven into the ground with the weight of a 140-pound hammer in general accordance with ASTM International (ASTM) D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sampler barrel in the brass rings, sealed, and transported to the laboratory for testing.

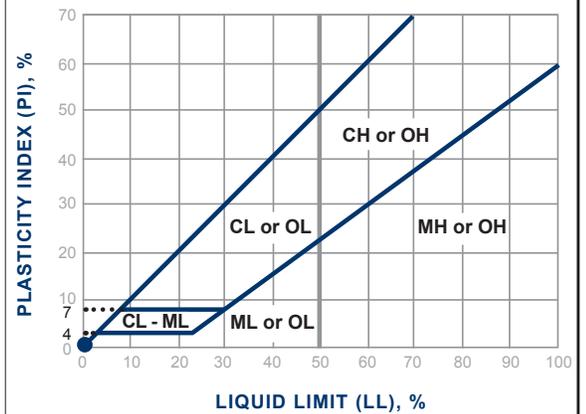
## ASTM D 2488

Primary Divisions		Secondary Divisions		
		Group Symbol	Group Name	
<b>COARSE-GRAINED SOILS</b> more than 50% retained on No. 200 sieve	<b>GRAVEL</b> more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	<b>SAND</b> 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
<b>FINE-GRAINED SOILS</b> 50% or more passes No. 200 sieve	<b>SILT and CLAY</b> liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	<b>SILT and CLAY</b> liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
			OH (plots on or above "A"-line)	organic CLAY
		ORGANIC	OH (plots below "A"-line)	organic SILT
Highly Organic Soils		PT	Peat	

## Grain Size

Description	Sieve Size	Grain Size	Approximate Size
Boulders	> 12"	> 12"	Larger than basketball-sized
Cobbles	3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	Thumb-sized to
	Fine	#4 - 3/4"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	Rock-salt-sized to pea-sized
	Medium	#40 - #10	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	Flour-sized to sugar-sized
Fines	Passing #200	< 0.0029"	Flour-sized and smaller

## Plasticity Chart



### Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Split Barrel (blows/foot)	SPT (blows/foot)	Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

### Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Split Barrel (blows/foot)	SPT (blows/foot)	Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
	9 - 15	11 - 20	6 - 10	7 - 13
V	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

# BORING LOG EXPLANATION SHEET

DEPTH (feet)	Bulk Driven SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0	█						<p>Bulk sample.</p> <p>Modified split-barrel drive sampler.</p> <p>No recovery with modified split-barrel drive sampler.</p> <p>Sample retained by others.</p> <p>Standard Penetration Test (SPT).</p> <p>No recovery with a SPT.</p> <p>Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.</p> <p>No recovery with Shelby tube sampler.</p> <p>Continuous Push Sample.</p> <p>Seepage.</p> <p>Groundwater encountered during drilling.</p> <p>Groundwater measured after drilling.</p>
5	XX/XX		∅				
10			∅				
15					█	SM	<p><u>MAJOR MATERIAL TYPE (SOIL):</u> Solid line denotes unit change.</p> <p>CL</p> <p>Dashed line denotes material change.</p> <p>Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface</p>
20							<p>The total depth line is a solid line that is drawn at the bottom of the boring.</p>

DEPTH (feet)	BULK SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>8/8/17</u> BORING NO. <u>B-1</u>
							GROUND ELEVATION <u>1,157' ± (MSL)</u> SHEET <u>1</u> OF <u>1</u>
METHOD OF DRILLING <u>8" Hollow-Stem Auger (CAL PAC Drilling)</u>							
DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u>							
SAMPLED BY <u>VAM/AES</u> LOGGED BY <u>VAM/AES</u> REVIEWED BY <u>JRS/CAP</u>							
<b>DESCRIPTION/INTERPRETATION</b>							
0						SC	FILL: Reddish brown, moist, medium dense, clayey fine to coarse SAND.
						SC	ALLUVIUM: Light red, moist, medium dense, clayey fine to coarse SAND.
		92/9"					VAL VERDE FORMATION: Black, white and reddish brown, damp, TONALITE BEDROCK; weathered.
		50/6"					
10							
		50/6"					
20		50/6"					
		50/2"					
30		61/8"					Total Depth = 30 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils on 8/8/17.
							Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 1

DEPTH (feet)	Bulk Driven	SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
								8/8/17	B-2	
								GROUND ELEVATION	SHEET	OF
								1,158' ± (MSL)	1	1
								METHOD OF DRILLING 8" Hollow-Stem Auger (CAL PAC Drilling)		
								DRIVE WEIGHT	DROP	
								140 lbs. (Auto. Trip Hammer)	30"	
								SAMPLED BY VAM/AES LOGGED BY VAM/AES REVIEWED BY JRS/CAP		
								<b>DESCRIPTION/INTERPRETATION</b>		
0							SC	<b>FILL:</b>		
							SC	Reddish brown, moist, medium dense, clayey fine to coarse SAND.		
			21	3.8				<b>ALLUVIUM:</b>		
								Light red, moist, medium dense to dense, clayey fine to coarse SAND.		
								Medium dense.		
10			38	6.7	124.1					
			50/6"	2.9				<b>VAL VERDE FORMATION:</b>		
								Black, white and reddish brown, damp, TONALITE BEDROCK; weathered.		
20			50/2"					Total Depth = 23 feet (Refusal).		
								Groundwater was not encountered during drilling.		
								Backfilled with on-site soils on 8/8/17.		
								<b>Notes:</b>		
								Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.		
								The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.		
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FIGURE A- 2

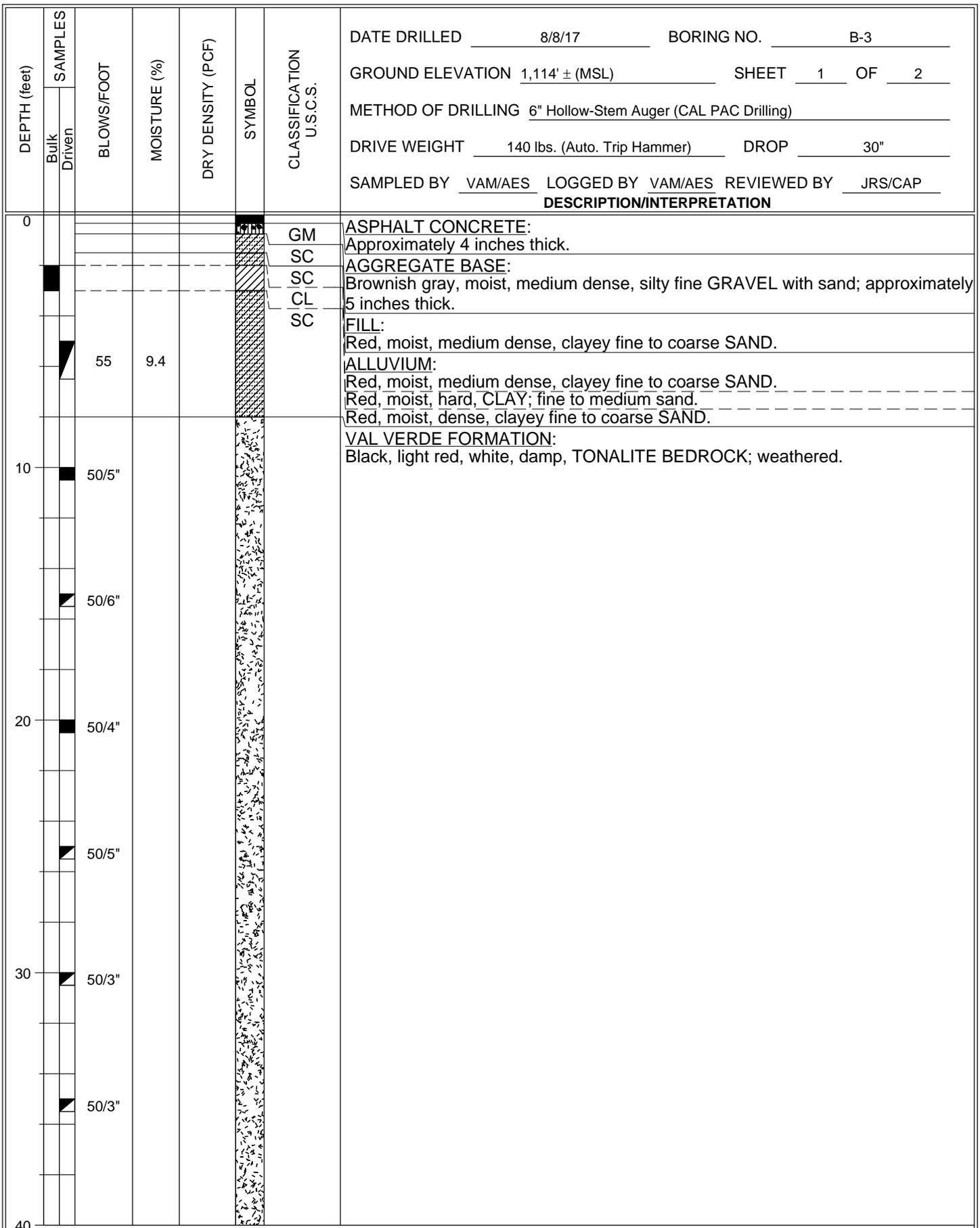


FIGURE A- 3

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
	Bulk	Driven						8/8/17	B-3	
								GROUND ELEVATION	SHEET	OF
								METHOD OF DRILLING		
								DRIVE WEIGHT	DROP	
								SAMPLED BY	LOGGED BY	REVIEWED BY
								<b>DESCRIPTION/INTERPRETATION</b>		
40	█		50/3"					VAL VERDE FORMATION: (Continued) Black, light red, white, moist, TONALITE BEDROCK; weathered.		
		█	50/3"					@45': Groundwater encountered during drilling; wet.		
50	█		50/4"					Total Depth = 50.3 feet. Groundwater encountered during drilling at approximately 45 feet. Bottom approximately 6 feet of boring backfilled with concrete; remainder of boring backfilled with on-site soils and capped with quick-set concrete on 8/8/17.		
								<u>Notes:</u> Groundwater may rise to a level higher than that measured in borehole due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.		
60										
70										
80										

FIGURE A- 4

DEPTH (feet)	Bulk Samples Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>8/8/17</u> BORING NO. <u>B-4</u>
							GROUND ELEVATION <u>1,147' ± (MSL)</u> SHEET <u>1</u> OF <u>1</u>
							METHOD OF DRILLING <u>6" Hollow-Stem Auger (CAL PAC Drilling)</u>
							DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u>
							SAMPLED BY <u>VAM/AES</u> LOGGED BY <u>VAM/AES</u> REVIEWED BY <u>JRS/CAP</u>
<b>DESCRIPTION/INTERPRETATION</b>							
0						GM	<u>ASPHALT CONCRETE:</u> Approximately 4 inches thick.
						SC	<u>AGGREGATE BASE:</u> Reddish brown, moist, medium dense, silty fine GRAVEL with sand; approximately 26 inches thick.
		9	7.3	104.6		SC	<u>FILL:</u> Reddish brown and red, moist, medium dense, clayey fine to medium SAND; trace fine gravel; trace asphalt concrete fragments.
		56	6.5				<u>ALLUVIUM:</u> Red, moist, loose, clayey fine SAND; pinhole porosity.
10		28					Reddish brown; very dense; clayey fine to coarse sand.
							Medium dense.
20		61/9"					<u>VAL VERDE FORMATION:</u> Black, light red, and white, damp, TONALITE BEDROCK; weathered.
		50/2"					Total Depth = 25.2 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils on 8/8/17.
30							<u>Notes:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
40							

FIGURE A- 5

DEPTH (feet)	Bulk Samples Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.				
							8/8/17	B-5				
							GROUND ELEVATION	1,112' ± (MSL)	SHEET	1	OF	2
							METHOD OF DRILLING	6" Hollow-Stem Auger (CAL PAC Drilling)				
							DRIVE WEIGHT	140 lbs. (Auto. Trip Hammer)	DROP	30"		
							SAMPLED BY	VAM/AES	LOGGED BY	VAM/AES	REVIEWED BY	JRS/CAP
							<b>DESCRIPTION/INTERPRETATION</b>					
0			6.0			SC	ASPHALT CONCRETE: Approximately 2 inches thick.					
						CL	ALLUVIUM: Reddish brown, moist, medium dense, clayey fine to coarse SAND.					
		28				SC	Reddish brown, moist, firm, sandy CLAY. Reddish brown, moist, dense, clayey fine to coarse SAND.					
10		86	5.0	108.4		SM	Very dense. Yellowish brown, moist, very dense, silty fine to coarse SAND.					
		39										
20		39					Medium dense; caliche veins and nodules.					
		27				SC	Brownish yellow, moist, dense, clayey fine to coarse SAND.					
30		48										
							Total Depth = 31.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with concrete on 8/8/17.					
							<u>Notes:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes					
40												

FIGURE A-6

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>8/8/17</u> BORING NO. <u>B-5</u>
	Bulk	Driven						GROUND ELEVATION <u>1,112' ± (MSL)</u> SHEET <u>2</u> OF <u>2</u>
								METHOD OF DRILLING <u>6" Hollow-Stem Auger (CAL PAC Drilling)</u>
								DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u>
								SAMPLED BY <u>VAM/AES</u> LOGGED BY <u>VAM/AES</u> REVIEWED BY <u>JRS/CAP</u>
								<b>DESCRIPTION/INTERPRETATION</b>
40								of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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FIGURE A-7

DEPTH (feet)	Bulk Samples Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED	BORING NO.	
							8/8/17	B-6	
							GROUND ELEVATION	SHEET	OF
							1,115' ± (MSL)	1	2
							METHOD OF DRILLING 6" Hollow-Stem Auger (CAL PAC Drilling)		
							DRIVE WEIGHT	DROP	
							140 lbs. (Auto. Trip Hammer)	30"	
							SAMPLED BY	LOGGED BY	REVIEWED BY
							VAM/AES	VAM/AES	JRS/CAP
							<b>DESCRIPTION/INTERPRETATION</b>		
0			8.7			SC	ASPHALT CONCRETE: Approximately 1.5 inches thick.		
							ALLUVIUM: Red, moist, medium dense, clayey fine to coarse SAND.		
		72	5.5	120.1			Very dense.		
						SM	Red, moist, very dense, silty fine to coarse SAND.		
10		54				SC	Red, moist, very dense, clayey fine to coarse SAND.		
							Brownish yellow.		
		36				SM	Brownish yellow, moist, medium dense, silty fine to coarse SAND.		
20		16							
		28	4.5	111.8					
30		8							
		45				SC	Dense. Red, moist, dense, clayey fine to coarse SAND.		
40									

FIGURE A- 8

DEPTH (feet)	SAMPLES Bulk Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>8/8/17</u> BORING NO. <u>B-6</u>
							GROUND ELEVATION <u>1,115' ± (MSL)</u> SHEET <u>2</u> OF <u>2</u>
							METHOD OF DRILLING <u>6" Hollow-Stem Auger (CAL PAC Drilling)</u>
							DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u>
							SAMPLED BY <u>VAM/AES</u> LOGGED BY <u>VAM/AES</u> REVIEWED BY <u>JRS/CAP</u>
							DESCRIPTION/INTERPRETATION
40		31				SC	ALLUVIUM: (Continued) Yellowish brown, moist, dense, clayey fine to coarse SAND.
		81					VAL VERDE FORMATION: Black, white, yellow, damp, TONALITE BEDROCK; weathered.
50		89					Total Depth = 51.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with concrete on 8/8/17.
60							<u>Notes:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
70							
80							

FIGURE A- 9

DEPTH (feet)	Bulk Driven	SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>8/8/17</u> BORING NO. <u>B-7</u>
								GROUND ELEVATION <u>1,115' ± (MSL)</u> SHEET <u>1</u> OF <u>1</u>
								METHOD OF DRILLING <u>6" Hollow-Stem Auger (CAL PAC Drilling)</u>
								DRIVE WEIGHT <u>140 lbs. (Auto. Trip Hammer)</u> DROP <u>30"</u>
								SAMPLED BY <u>VAM/AES</u> LOGGED BY <u>VAM/AES</u> REVIEWED BY <u>JRS/CAP</u>
								DESCRIPTION/INTERPRETATION
0							SC	<p>ASPHALT CONCRETE: Approximately 1.5 inches thick.</p> <p>ALLUVIUM: Red, moist, medium dense, clayey fine to coarse SAND.</p>
			62	3.8	270.3			Dense; caliche veins.
10			55					Very dense.
			73					
20			79					Brownish yellow.
								<p>Total Depth = 21.5 feet. Groundwater was not encountered during drilling. Backfilled with on-site soils and capped with concrete on 8/8/17.</p> <p>Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.</p>
30								
40								

FIGURE A- 10



# APPENDIX B

## Geotechnical Laboratory Testing

# APPENDIX B

## GEOTECHNICAL LABORATORY TESTING

### **Classification**

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory excavations in Appendix A.

### **Moisture Content**

The moisture content of samples obtained from the exploratory excavations was evaluated in accordance with ASTM D 2216. The test results are presented on the logs of the exploratory excavations in Appendix A.

### **In Place Moisture and Density Tests**

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory excavations were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory excavations in Appendix A.

### **Gradation Analysis**

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain size distribution curves are shown on Figures B-1 and B-2. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

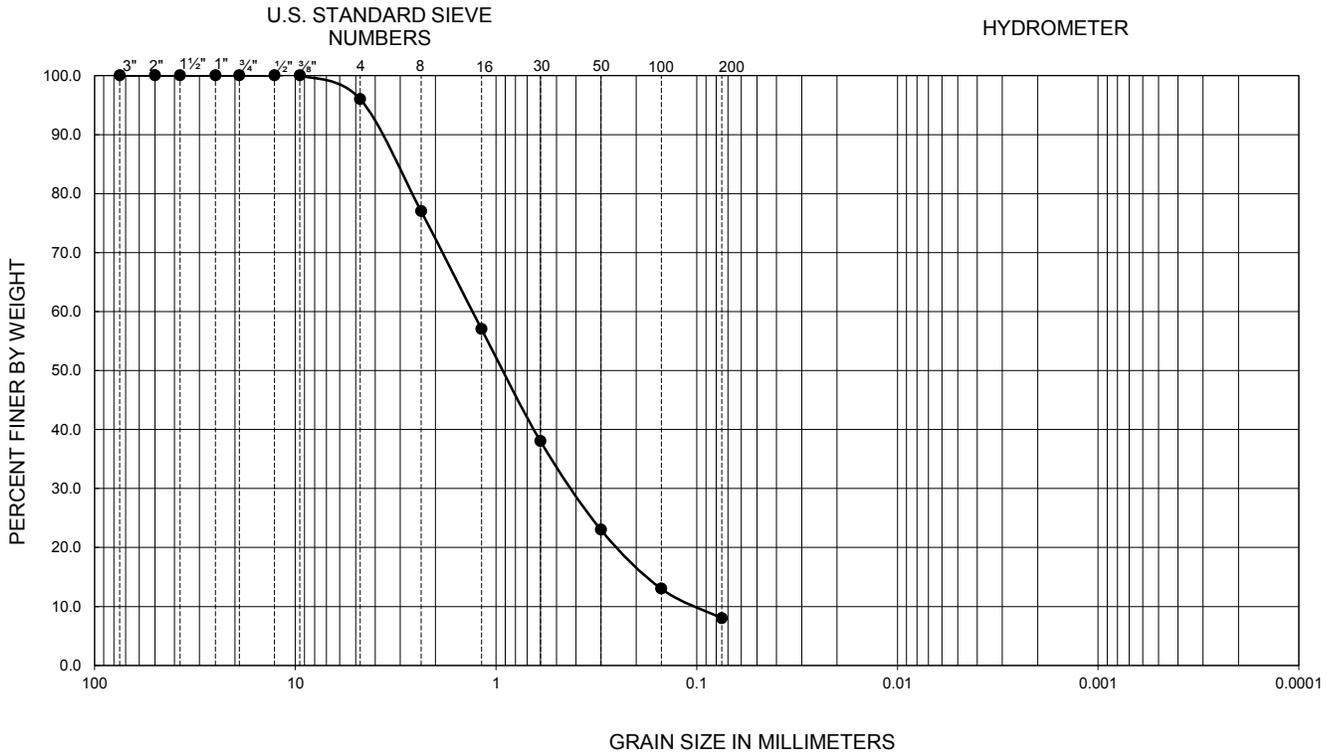
### **Direct Shear Tests**

A direct shear test was performed on a remolded sample in general accordance with ASTM D 3080 to evaluate the shear strength characteristics of a selected material. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figures B-3 through B-5.

### **Soil Corrosivity Tests**

Soil pH, and resistivity tests were performed on representative samples in general accordance with California Test (CT) 643. The soluble sulfate and chloride content of selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure B-6.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

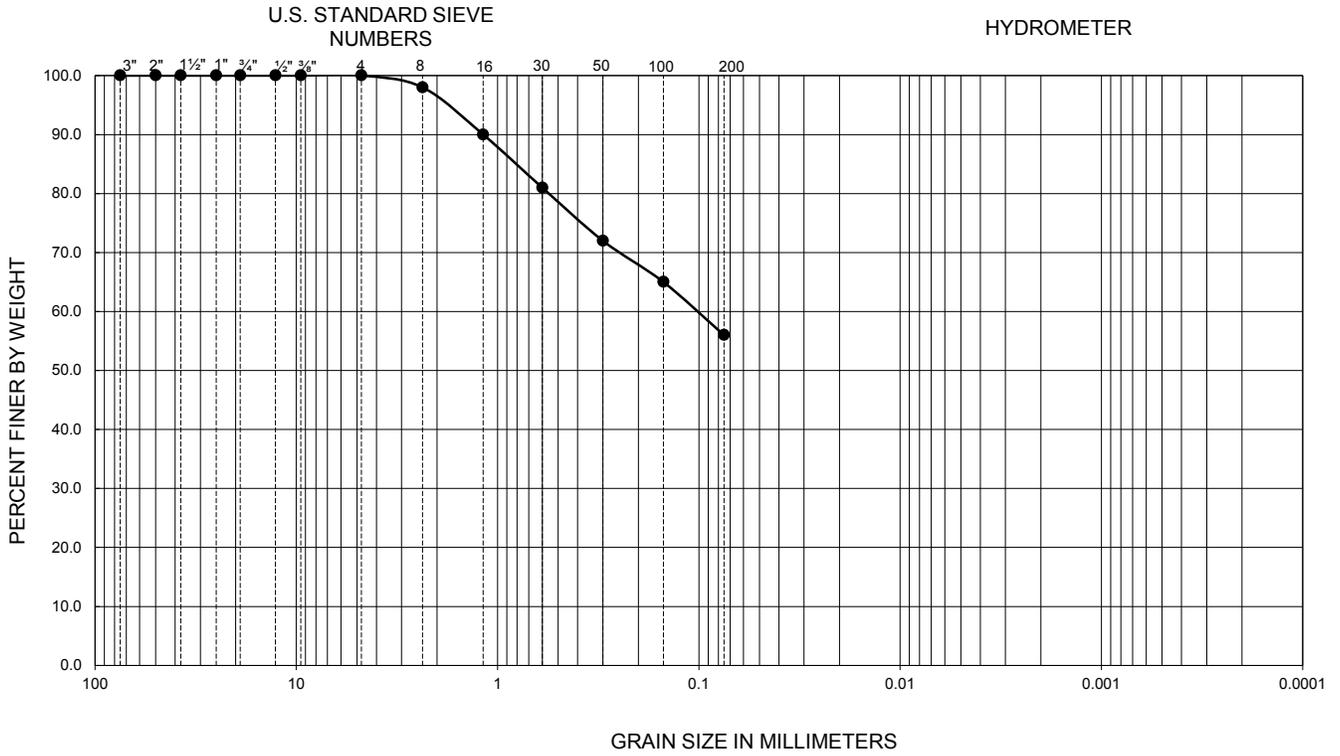


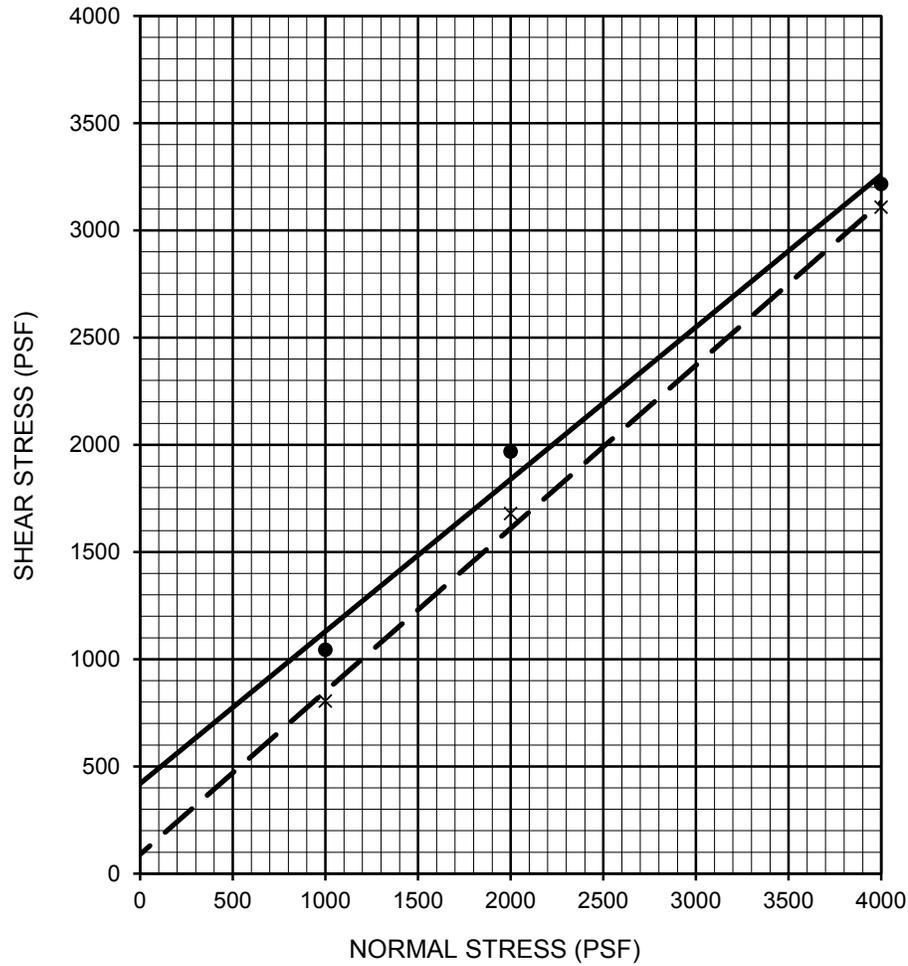
Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D <sub>10</sub>	D <sub>30</sub>	D <sub>60</sub>	C <sub>u</sub>	C <sub>c</sub>	Passing No. 200 (percent)	USCS Equivalent
●	B-1	3.5-4.5	--	--	--	0.104	0.42	1.36	13.0	1.2	8	SW-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-1

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY





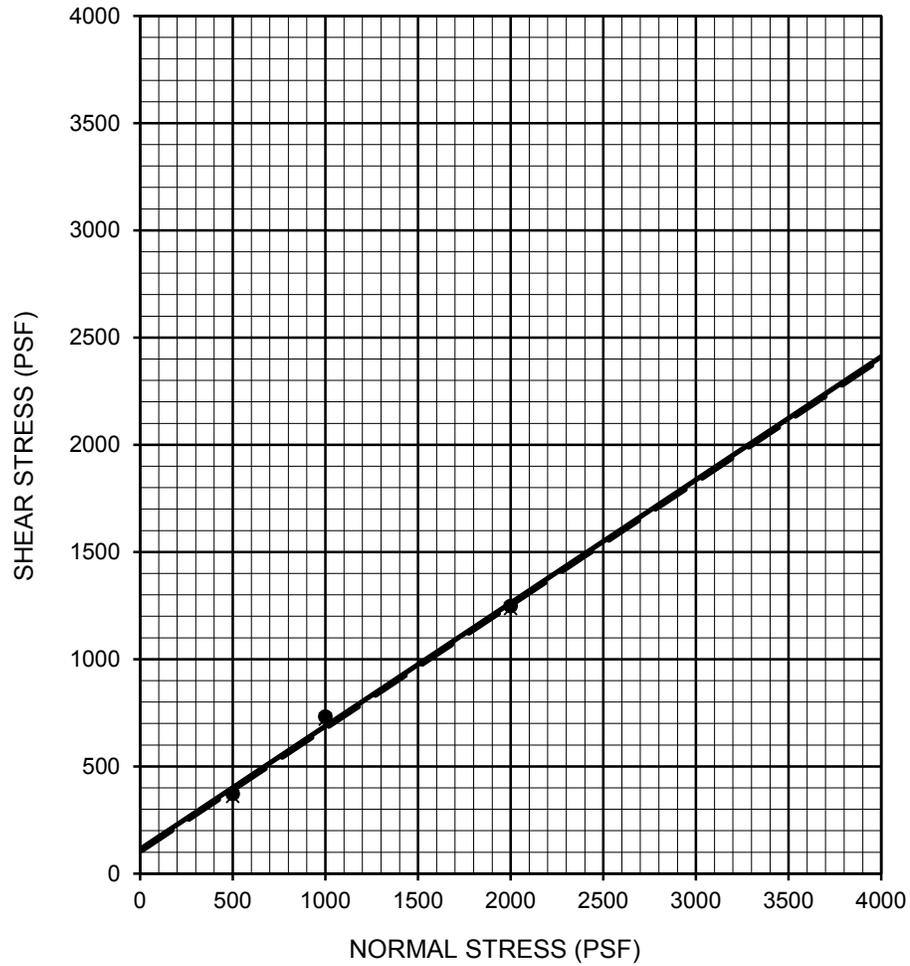
Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND	—●—	B-2	10.0-11.5	Peak	420	35	SC
CLAYEY SAND	- - X - -	B-2	10.0-11.5	Ultimate	90	37	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-3



**DIRECT SHEAR TEST RESULTS**  
 GREENHOUSE REPLACEMENT PROJECT NO. 1  
 UNIVERSITY OF CALIFORNIA, RIVERSIDE



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND	—●—	B-4	5.0-6.5	Peak	114	30	SC
CLAYEY SAND	- - X - -	B-4	5.0-6.5	Ultimate	102	30	SC

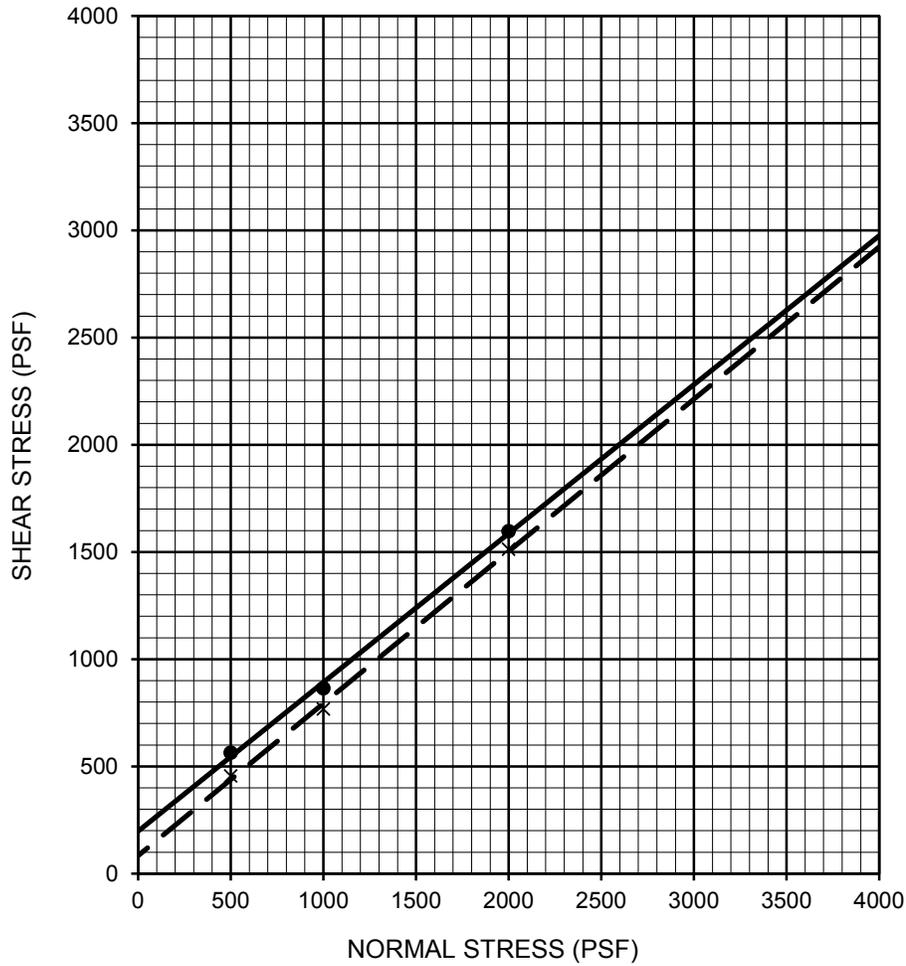
PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-4



**DIRECT SHEAR TEST RESULTS**  
 GREENHOUSE REPLACEMENT PROJECT NO. 1  
 UNIVERSITY OF CALIFORNIA, RIVERSIDE

210241001 | 9/17



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
CLAYEY SAND	—●—	B-6	5.0-6.5	Peak	198	35	SC
CLAYEY SAND	- - X - -	B-6	5.0-6.5	Ultimate	84	35	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-5



**DIRECT SHEAR TEST RESULTS**  
 GREENHOUSE REPLACEMENT PROJECT NO. 1  
 UNIVERSITY OF CALIFORNIA, RIVERSIDE

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH <sup>1</sup>	RESISTIVITY <sup>1</sup> (ohm-cm)	SULFATE CONTENT <sup>2</sup>		CHLORIDE CONTENT <sup>3</sup> (ppm)
				(ppm)	(%)	
B-2	20.0-21.5	7.3	16,275	20	0.002	80
B-3	2.0-3.0	7.4	1,112	150	0.015	35
B-4	10.0-14.0	7.7	4,931	20	0.002	50
B-5	1.5-2.5	7.2	5,300	50	0.005	25

<sup>1</sup> PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643

<sup>2</sup> PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417

<sup>3</sup> PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

**FIGURE B-6**

# APPENDIX C

## Analytical Laboratory Testing



25712 Commercentre Drive  
Lake Forest, California 92630  
949.297.5020 Phone  
949.297.5027 Fax

21 August 2017

Jennifer Schmidt  
Ninyo & Moore  
475 Goddard, Ste. 200  
Irvine, CA 92618  
RE: UCR / Greenhouse

Enclosed are the results of analyses for samples received by the laboratory on 08/11/17 16:50. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Lisa Nguyen  
Project Manager Assistant

Ninyo & Moore  
475 Goddard, Ste. 200  
Irvine CA, 92618

Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B-4 2.2-2.7	T172116-01	Soil	08/08/17 06:06	08/11/17 16:50
B-3 0.8-1.4	T172116-02	Soil	08/08/17 07:59	08/11/17 16:50
B-1 0.0-0.3	T172116-03	Soil	08/08/17 11:21	08/11/17 16:50
B-2 0.0-0.3	T172116-04	Soil	08/08/17 01:40	08/11/17 16:50
B-7 0.1-0.4	T172116-05	Soil	08/09/17 06:10	08/11/17 16:50
B-5 0.2-0.5	T172116-06	Soil	08/09/17 11:31	08/11/17 16:50
B-6 0.1-0.5	T172116-07	Soil	08/09/17 08:02	08/11/17 16:50

SunStar Laboratories, Inc.



*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Lisa Nguyen, Project Manager Assistant

Ninyo & Moore  
475 Goddard, Ste. 200  
Irvine CA, 92618

Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

### DETECTIONS SUMMARY

**Sample ID:** B-4 2.2-2.7

**Laboratory ID:** T172116-01

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	66	1.0		mg/kg	EPA 6010B	
Chromium	10	2.0		mg/kg	EPA 6010B	
Cobalt	4.1	2.0		mg/kg	EPA 6010B	
Copper	7.9	1.0		mg/kg	EPA 6010B	
Nickel	6.5	2.0		mg/kg	EPA 6010B	
Vanadium	18	5.0		mg/kg	EPA 6010B	
Zinc	33	1.0		mg/kg	EPA 6010B	

**Sample ID:** B-3 0.8-1.4

**Laboratory ID:** T172116-02

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	51	1.0		mg/kg	EPA 6010B	
Chromium	6.0	2.0		mg/kg	EPA 6010B	
Cobalt	5.2	2.0		mg/kg	EPA 6010B	
Copper	2.1	1.0		mg/kg	EPA 6010B	
Nickel	4.2	2.0		mg/kg	EPA 6010B	
Vanadium	21	5.0		mg/kg	EPA 6010B	
Zinc	22	1.0		mg/kg	EPA 6010B	

**Sample ID:** B-1 0.0-0.3

**Laboratory ID:** T172116-03

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	67	1.0		mg/kg	EPA 6010B	
Chromium	6.1	2.0		mg/kg	EPA 6010B	
Cobalt	5.8	2.0		mg/kg	EPA 6010B	
Copper	4.2	1.0		mg/kg	EPA 6010B	
Nickel	3.3	2.0		mg/kg	EPA 6010B	
Vanadium	22	5.0		mg/kg	EPA 6010B	
Zinc	43	1.0		mg/kg	EPA 6010B	

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Lisa Nguyen, Project Manager Assistant

Ninyo & Moore  
475 Goddard, Ste. 200  
Irvine CA, 92618

Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

Reported:  
08/21/17 13:53

**Sample ID:** B-2 0.0-0.3

**Laboratory ID:** T172116-04

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	87	1.0		mg/kg	EPA 6010B	
Chromium	8.0	2.0		mg/kg	EPA 6010B	
Cobalt	6.8	2.0		mg/kg	EPA 6010B	
Copper	4.9	1.0		mg/kg	EPA 6010B	
Nickel	5.2	2.0		mg/kg	EPA 6010B	
Vanadium	24	5.0		mg/kg	EPA 6010B	
Zinc	52	1.0		mg/kg	EPA 6010B	

**Sample ID:** B-7 0.1-0.4

**Laboratory ID:** T172116-05

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	87	1.0		mg/kg	EPA 6010B	
Chromium	8.2	2.0		mg/kg	EPA 6010B	
Cobalt	8.1	2.0		mg/kg	EPA 6010B	
Copper	4.8	1.0		mg/kg	EPA 6010B	
Nickel	4.1	2.0		mg/kg	EPA 6010B	
Vanadium	31	5.0		mg/kg	EPA 6010B	
Zinc	30	1.0		mg/kg	EPA 6010B	

**Sample ID:** B-5 0.2-0.5

**Laboratory ID:** T172116-06

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	86	1.0		mg/kg	EPA 6010B	
Chromium	14	2.0		mg/kg	EPA 6010B	
Cobalt	7.2	2.0		mg/kg	EPA 6010B	
Copper	2.8	1.0		mg/kg	EPA 6010B	
Nickel	5.3	2.0		mg/kg	EPA 6010B	
Vanadium	26	5.0		mg/kg	EPA 6010B	
Zinc	29	1.0		mg/kg	EPA 6010B	

**Sample ID:** B-6 0.1-0.5

**Laboratory ID:** T172116-07

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Barium	70	1.0		mg/kg	EPA 6010B	

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**Sample ID:** B-6 0.1-0.5

**Laboratory ID:** T172116-07

Analyte	Result	Reporting		Units	Method	Notes
		Limit				
Chromium	7.5	2.0		mg/kg	EPA 6010B	
Cobalt	5.9	2.0		mg/kg	EPA 6010B	
Copper	2.5	1.0		mg/kg	EPA 6010B	
Nickel	4.5	2.0		mg/kg	EPA 6010B	
Vanadium	21	5.0		mg/kg	EPA 6010B	
Zinc	25	1.0		mg/kg	EPA 6010B	
4,4'-DDE	8.9	5.0		ug/kg	EPA 8081A	

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

Reported:  
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**B-4 2.2-2.7**  
**T172116-01 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>66</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>10</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>4.1</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>7.9</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>6.5</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>18</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>33</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	

**Organochlorine Pesticides by EPA Method 8081A**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
alpha-BHC	ND	25	ug/kg	5	7081408	08/14/17	08/14/17	EPA 8081A	R-07
gamma-BHC (Lindane)	ND	25	"	"	"	"	"	"	R-07
beta-BHC	ND	25	"	"	"	"	"	"	R-07
delta-BHC	ND	25	"	"	"	"	"	"	R-07
Heptachlor	ND	25	"	"	"	"	"	"	R-07
Aldrin	ND	25	"	"	"	"	"	"	R-07
Heptachlor epoxide	ND	25	"	"	"	"	"	"	R-07
gamma-Chlordane	ND	25	"	"	"	"	"	"	R-07
alpha-Chlordane	ND	25	"	"	"	"	"	"	R-07
Endosulfan I	ND	25	"	"	"	"	"	"	R-07
4,4'-DDE	ND	25	"	"	"	"	"	"	R-07

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

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**B-4 2.2-2.7**  
**T172116-01 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Organochlorine Pesticides by EPA Method 8081A**

Dieldrin	ND	25	ug/kg	5	7081408	08/14/17	08/14/17	EPA 8081A	R-07
Endrin	ND	25	"	"	"	"	"	"	R-07
4,4'-DDD	ND	25	"	"	"	"	"	"	R-07
Endosulfan II	ND	25	"	"	"	"	"	"	R-07
4,4'-DDT	ND	25	"	"	"	"	"	"	R-07
Endrin aldehyde	ND	25	"	"	"	"	"	"	R-07
Endosulfan sulfate	ND	25	"	"	"	"	"	"	R-07
Methoxychlor	ND	50	"	"	"	"	"	"	R-07
Endrin ketone	ND	25	"	"	"	"	"	"	R-07
Toxaphene	ND	1000	"	"	"	"	"	"	R-07
Surrogate: Tetrachloro-meta-xylene		44.8 %		35-140	"	"	"	"	R-07
Surrogate: Decachlorobiphenyl		50.6 %		35-140	"	"	"	"	R-07

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**B-3 0.8-1.4**  
**T172116-02 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>51</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>6.0</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>5.2</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>2.1</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>4.2</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>21</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>22</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	
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**Organochlorine Pesticides by EPA Method 8081A**

alpha-BHC	ND	25	ug/kg	5	7081408	08/14/17	08/14/17	EPA 8081A	R-07
gamma-BHC (Lindane)	ND	25	"	"	"	"	"	"	R-07
beta-BHC	ND	25	"	"	"	"	"	"	R-07
delta-BHC	ND	25	"	"	"	"	"	"	R-07
Heptachlor	ND	25	"	"	"	"	"	"	R-07
Aldrin	ND	25	"	"	"	"	"	"	R-07
Heptachlor epoxide	ND	25	"	"	"	"	"	"	R-07
gamma-Chlordane	ND	25	"	"	"	"	"	"	R-07
alpha-Chlordane	ND	25	"	"	"	"	"	"	R-07
Endosulfan I	ND	25	"	"	"	"	"	"	R-07
4,4'-DDE	ND	25	"	"	"	"	"	"	R-07
Dieldrin	ND	25	"	"	"	"	"	"	R-07

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**Reported:**  
08/21/17 13:53

**B-3 0.8-1.4**  
**T172116-02 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Organochlorine Pesticides by EPA Method 8081A**

Endrin	ND	25	ug/kg	5	7081408	08/14/17	08/14/17	EPA 8081A	R-07
4,4'-DDD	ND	25	"	"	"	"	"	"	R-07
Endosulfan II	ND	25	"	"	"	"	"	"	R-07
4,4'-DDT	ND	25	"	"	"	"	"	"	R-07
Endrin aldehyde	ND	25	"	"	"	"	"	"	R-07
Endosulfan sulfate	ND	25	"	"	"	"	"	"	R-07
Methoxychlor	ND	50	"	"	"	"	"	"	R-07
Endrin ketone	ND	25	"	"	"	"	"	"	R-07
Toxaphene	ND	1000	"	"	"	"	"	"	R-07
Surrogate: Tetrachloro-meta-xylene		44.3 %	35-140		"	"	"	"	R-07
Surrogate: Decachlorobiphenyl		36.7 %	35-140		"	"	"	"	R-07

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**B-1 0.0-0.3**  
**T172116-03 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>67</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>6.1</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>5.8</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>4.2</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>3.3</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>22</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>43</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	
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**Organochlorine Pesticides by EPA Method 8081A**

alpha-BHC	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4'-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

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**B-1 0.0-0.3**  
**T172116-03 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Organochlorine Pesticides by EPA Method 8081A**

Endrin	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
4,4'-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4'-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	10	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	200	"	"	"	"	"	"	
<i>Surrogate: Tetrachloro-meta-xylene</i>		73.3 %	35-140		"	"	"	"	
<i>Surrogate: Decachlorobiphenyl</i>		73.6 %	35-140		"	"	"	"	

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

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**B-2 0.0-0.3**  
**T172116-04 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>87</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>8.0</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>6.8</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>4.9</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>5.2</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>24</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>52</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	
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**Organochlorine Pesticides by EPA Method 8081A**

alpha-BHC	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4'-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	

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**B-2 0.0-0.3**  
**T172116-04 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Organochlorine Pesticides by EPA Method 8081A**

Endrin	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
4,4'-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4'-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	10	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	200	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		72.4 %	35-140		"	"	"	"	
Surrogate: Decachlorobiphenyl		71.7 %	35-140		"	"	"	"	

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Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**B-7 0.1-0.4**  
**T172116-05 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>87</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>8.2</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>8.1</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>4.8</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>4.1</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>31</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>30</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	
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**Organochlorine Pesticides by EPA Method 8081A**

alpha-BHC	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
4,4'-DDE	ND	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	

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**B-7 0.1-0.4**  
**T172116-05 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**Organochlorine Pesticides by EPA Method 8081A**

Endrin	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
4,4'-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4'-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	10	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	200	"	"	"	"	"	"	
Surrogate: Tetrachloro-meta-xylene		69.4 %	35-140		"	"	"	"	
Surrogate: Decachlorobiphenyl		57.3 %	35-140		"	"	"	"	

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Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**B-5 0.2-0.5**  
**T172116-06 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>86</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>14</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>7.2</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>2.8</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>5.3</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>26</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>29</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	

**Organochlorine Pesticides by EPA Method 8081A**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
alpha-BHC	ND	25	ug/kg	5	7081408	08/14/17	08/14/17	EPA 8081A	R-07
gamma-BHC (Lindane)	ND	25	"	"	"	"	"	"	R-07
beta-BHC	ND	25	"	"	"	"	"	"	R-07
delta-BHC	ND	25	"	"	"	"	"	"	R-07
Heptachlor	ND	25	"	"	"	"	"	"	R-07
Aldrin	ND	25	"	"	"	"	"	"	R-07
Heptachlor epoxide	ND	25	"	"	"	"	"	"	R-07
gamma-Chlordane	ND	25	"	"	"	"	"	"	R-07
alpha-Chlordane	ND	25	"	"	"	"	"	"	R-07
Endosulfan I	ND	25	"	"	"	"	"	"	R-07
4,4'-DDE	ND	25	"	"	"	"	"	"	R-07
Dieldrin	ND	25	"	"	"	"	"	"	R-07

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**B-5 0.2-0.5**  
**T172116-06 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Organochlorine Pesticides by EPA Method 8081A**

Endrin	ND	25	ug/kg	5	7081408	08/14/17	08/14/17	EPA 8081A	R-07
4,4'-DDD	ND	25	"	"	"	"	"	"	R-07
Endosulfan II	ND	25	"	"	"	"	"	"	R-07
4,4'-DDT	ND	25	"	"	"	"	"	"	R-07
Endrin aldehyde	ND	25	"	"	"	"	"	"	R-07
Endosulfan sulfate	ND	25	"	"	"	"	"	"	R-07
Methoxychlor	ND	50	"	"	"	"	"	"	R-07
Endrin ketone	ND	25	"	"	"	"	"	"	R-07
Toxaphene	ND	1000	"	"	"	"	"	"	R-07
Surrogate: Tetrachloro-meta-xylene		45.1 %		35-140	"	"	"	"	R-07
Surrogate: Decachlorobiphenyl		44.7 %		35-140	"	"	"	"	R-07

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**B-6 0.1-0.5**  
**T172116-07 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Metals by EPA 6010B**

Antimony	ND	3.0	mg/kg	1	7081430	08/14/17	08/15/17	EPA 6010B	
Silver	ND	2.0	"	"	"	"	"	"	
Arsenic	ND	5.0	"	"	"	"	"	"	
<b>Barium</b>	<b>70</b>	1.0	"	"	"	"	"	"	
Beryllium	ND	1.0	"	"	"	"	"	"	
Cadmium	ND	2.0	"	"	"	"	"	"	
<b>Chromium</b>	<b>7.5</b>	2.0	"	"	"	"	"	"	
<b>Cobalt</b>	<b>5.9</b>	2.0	"	"	"	"	"	"	
<b>Copper</b>	<b>2.5</b>	1.0	"	"	"	"	"	"	
Lead	ND	3.0	"	"	"	"	"	"	
Molybdenum	ND	5.0	"	"	"	"	"	"	
<b>Nickel</b>	<b>4.5</b>	2.0	"	"	"	"	"	"	
Selenium	ND	5.0	"	"	"	"	"	"	
Thallium	ND	2.0	"	"	"	"	"	"	
<b>Vanadium</b>	<b>21</b>	5.0	"	"	"	"	"	"	
<b>Zinc</b>	<b>25</b>	1.0	"	"	"	"	"	"	

**Cold Vapor Extraction EPA 7470/7471**

Mercury	ND	0.10	mg/kg	1	7081432	08/14/17	08/15/17	EPA 7471A Soil	
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**Organochlorine Pesticides by EPA Method 8081A**

alpha-BHC	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
gamma-BHC (Lindane)	ND	5.0	"	"	"	"	"	"	
beta-BHC	ND	5.0	"	"	"	"	"	"	
delta-BHC	ND	5.0	"	"	"	"	"	"	
Heptachlor	ND	5.0	"	"	"	"	"	"	
Aldrin	ND	5.0	"	"	"	"	"	"	
Heptachlor epoxide	ND	5.0	"	"	"	"	"	"	
gamma-Chlordane	ND	5.0	"	"	"	"	"	"	
alpha-Chlordane	ND	5.0	"	"	"	"	"	"	
Endosulfan I	ND	5.0	"	"	"	"	"	"	
<b>4,4'-DDE</b>	<b>8.9</b>	5.0	"	"	"	"	"	"	
Dieldrin	ND	5.0	"	"	"	"	"	"	

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Project Manager: Jennifer Schmidt

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08/21/17 13:53

**B-6 0.1-0.5**  
**T172116-07 (Soil)**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**SunStar Laboratories, Inc.**

**Organochlorine Pesticides by EPA Method 8081A**

Endrin	ND	5.0	ug/kg	1	7081408	08/14/17	08/14/17	EPA 8081A	
4,4'-DDD	ND	5.0	"	"	"	"	"	"	
Endosulfan II	ND	5.0	"	"	"	"	"	"	
4,4'-DDT	ND	5.0	"	"	"	"	"	"	
Endrin aldehyde	ND	5.0	"	"	"	"	"	"	
Endosulfan sulfate	ND	5.0	"	"	"	"	"	"	
Methoxychlor	ND	10	"	"	"	"	"	"	
Endrin ketone	ND	5.0	"	"	"	"	"	"	
Toxaphene	ND	200	"	"	"	"	"	"	
<i>Surrogate: Tetrachloro-meta-xylene</i>		69.2 %	35-140		"	"	"	"	
<i>Surrogate: Decachlorobiphenyl</i>		60.6 %	35-140		"	"	"	"	

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Project: UCR / Greenhouse  
 Project Number: 210241001  
 Project Manager: Jennifer Schmidt

Reported:  
 08/21/17 13:53

**Metals by EPA 6010B - Quality Control**

**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7081430 - EPA 3051**

**Blank (7081430-BLK1)**

Prepared: 08/14/17 Analyzed: 08/15/17

Antimony	ND	3.0	mg/kg							
Silver	ND	2.0	"							
Arsenic	ND	5.0	"							
Barium	ND	1.0	"							
Beryllium	ND	1.0	"							
Cadmium	ND	2.0	"							
Chromium	ND	2.0	"							
Cobalt	ND	2.0	"							
Copper	ND	1.0	"							
Lead	ND	3.0	"							
Molybdenum	ND	5.0	"							
Nickel	ND	2.0	"							
Selenium	ND	5.0	"							
Thallium	ND	2.0	"							
Vanadium	ND	5.0	"							
Zinc	ND	1.0	"							

**LCS (7081430-BS1)**

Prepared: 08/14/17 Analyzed: 08/15/17

Arsenic	102	5.0	mg/kg	100		102	75-125			
Barium	105	1.0	"	100		105	75-125			
Cadmium	106	2.0	"	100		106	75-125			
Chromium	106	2.0	"	100		106	75-125			
Lead	106	3.0	"	100		106	75-125			

**Matrix Spike (7081430-MS1)**

Source: T172116-01

Prepared: 08/14/17 Analyzed: 08/15/17

Arsenic	85.3	5.0	mg/kg	97.1	2.99	84.7	75-125			
Barium	145	1.0	"	97.1	66.4	80.8	75-125			
Cadmium	83.1	2.0	"	97.1	ND	85.6	75-125			
Chromium	92.7	2.0	"	97.1	10.2	84.9	75-125			
Lead	94.8	3.0	"	97.1	ND	97.7	75-125			

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**Metals by EPA 6010B - Quality Control**

**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7081430 - EPA 3051**

Matrix Spike Dup (7081430-MSD1)	Source: T172116-01			Prepared: 08/14/17 Analyzed: 08/15/17						
Arsenic	77.0	5.0	mg/kg	97.1	2.99	76.3	75-125	10.1	20	
Barium	145	1.0	"	97.1	66.4	80.9	75-125	0.0878	20	
Cadmium	77.8	2.0	"	97.1	ND	80.1	75-125	6.63	20	
Chromium	99.3	2.0	"	97.1	10.2	91.7	75-125	6.91	20	
Lead	86.1	3.0	"	97.1	ND	88.7	75-125	9.67	20	

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Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**Cold Vapor Extraction EPA 7470/7471 - Quality Control**

**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7081432 - EPA 7471A Soil**

**Blank (7081432-BLK1)**

Prepared: 08/14/17 Analyzed: 08/15/17

Mercury	ND	0.10	mg/kg							
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**LCS (7081432-BS1)**

Prepared: 08/14/17 Analyzed: 08/15/17

Mercury	0.355	0.10	mg/kg	0.397		89.3	75-125			
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**Matrix Spike (7081432-MS1)**

**Source: T172116-01**

Prepared: 08/14/17 Analyzed: 08/15/17

Mercury	0.369	0.10	mg/kg	0.410	ND	90.1	75-125			
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**Matrix Spike Dup (7081432-MSD1)**

**Source: T172116-01**

Prepared: 08/14/17 Analyzed: 08/15/17

Mercury	0.363	0.10	mg/kg	0.391	ND	93.0	75-125	1.68	20	
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**Organochlorine Pesticides by EPA Method 8081A - Quality Control**

**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7081408 - EPA 3550 ECD/GCMS**

**Blank (7081408-BLK1)**

Prepared & Analyzed: 08/14/17

alpha-BHC	ND	5.0	ug/kg							
gamma-BHC (Lindane)	ND	5.0	"							
beta-BHC	ND	5.0	"							
delta-BHC	ND	5.0	"							
Heptachlor	ND	5.0	"							
Aldrin	ND	5.0	"							
Heptachlor epoxide	ND	5.0	"							
gamma-Chlordane	ND	5.0	"							
alpha-Chlordane	ND	5.0	"							
Endosulfan I	ND	5.0	"							
4,4'-DDE	ND	5.0	"							
Dieldrin	ND	5.0	"							
Endrin	ND	5.0	"							
4,4'-DDD	ND	5.0	"							
Endosulfan II	ND	5.0	"							
4,4'-DDT	ND	5.0	"							
Endrin aldehyde	ND	5.0	"							
Endosulfan sulfate	ND	5.0	"							
Methoxychlor	ND	10	"							
Endrin ketone	ND	5.0	"							
Toxaphene	ND	200	"							
Surrogate: Tetrachloro-meta-xylene	6.16		"	9.90		62.2	35-140			
Surrogate: Decachlorobiphenyl	6.73		"	9.90		68.0	35-140			

**LCS (7081408-BS1)**

Prepared & Analyzed: 08/14/17

gamma-BHC (Lindane)	31.3	5.0	ug/kg	40.0		78.4	40-120			
Heptachlor	32.9	5.0	"	40.0		82.2	40-120			
Aldrin	28.4	5.0	"	40.0		70.9	40-120			
Dieldrin	34.1	5.0	"	40.0		85.3	40-120			
Endrin	33.1	5.0	"	40.0		82.7	40-120			
4,4'-DDT	41.4	5.0	"	40.0		103	33-147			
Surrogate: Tetrachloro-meta-xylene	7.63		"	10.0		76.3	35-140			
Surrogate: Decachlorobiphenyl	8.36		"	10.0		83.6	35-140			

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Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

**Organochlorine Pesticides by EPA Method 8081A - Quality Control**

**SunStar Laboratories, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 7081408 - EPA 3550 ECD/GCMS**

**LCS Dup (7081408-BSD1)**

Prepared & Analyzed: 08/14/17

gamma-BHC (Lindane)	27.8	5.0	ug/kg	40.0		69.5	40-120	12.0	30	
Heptachlor	33.3	5.0	"	40.0		83.4	40-120	1.39	30	
Aldrin	27.7	5.0	"	40.0		69.3	40-120	2.25	30	
Dieldrin	33.9	5.0	"	40.0		84.6	40-120	0.809	30	
Endrin	32.7	5.0	"	40.0		81.8	40-120	1.15	30	
4,4'-DDT	39.5	5.0	"	40.0		98.6	33-147	4.75	30	
Surrogate: Tetrachloro-meta-xylene	7.68		"	10.0		76.8	35-140			
Surrogate: Decachlorobiphenyl	8.45		"	10.0		84.5	35-140			

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Lisa Nguyen, Project Manager Assistant

Ninyo & Moore  
475 Goddard, Ste. 200  
Irvine CA, 92618

Project: UCR / Greenhouse  
Project Number: 210241001  
Project Manager: Jennifer Schmidt

**Reported:**  
08/21/17 13:53

### Notes and Definitions

R-07 Reporting limit for this compound(s) has been raised to account for dilution necessary due to high levels of interfering compound(s) and/or matrix affect.

DET Analyte DETECTED

ND Analyte NOT DETECTED at or above the reporting limit

NR Not Reported

dry Sample results reported on a dry weight basis

RPD Relative Percent Difference

---

SunStar Laboratories, Inc.

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



---

Lisa Nguyen, Project Manager Assistant



**SunStar  
Laboratories, Inc.**

**Chain of Custody Record**

PROVIDING QUALITY ANALYTICAL SERVICES NATIONWIDE

25712 Commercentre Drive, Lake Forest, CA 92630  
949-297-5020

Client: NINYO & MOORE  
Address: 475 GODDARD, SUITE 200, IRVINE CA 92618  
Phone: 949-753-2070 Fax: 949-753-7071  
Project Manager: JENNIFER SCHMIDT JSCHMIDT@NINYOANDMOORE.COM

Date: 8/8/2017 Page: 1 Of 1  
Project Name: UCR / GREENHOUSE  
Collector: AURA E. SCHARF Client Project #: 210241001  
Batch #: 772116 EDF #: \_\_\_\_\_

Sample ID	Date Sampled	Time	Sample Type	Container Type	8260	8260 + OXY	8260 BTEX, OXY only	8270	8021 BTEX	8015M (gasoline)	8015M (diesel)	8015M Ext./Carbon Chain	6010/7000 Title 22 Metals	6020 ICP-MS Metals	8081 OCS + DBCP 8081 B	Laboratory ID #	Comments/Preservative	Total # of containers		
B-4 2.2 - 2.3'	8/8/2017	6:00	SOIL	4oz JAR												01				
B-3 0.8 - 1.4'	8/8/2017	7:59	SOIL	4oz JAR												02				
B-1 0.0 - 0.3'	8/8/2017	11:21	SOIL	4oz JAR												03				
B-2 0.0 - 0.3'	8/8/2017	1:40	SOIL	4oz JAR												04				
B-2 0.1 - 0.4'	8/9/2017	6:10	SOIL	4oz JAR												05				
B-5 0.2 - 0.5'	8/9/2017	11:31	SOIL	4oz JAR												06				
B-6 0.1 - 0.5'	8/9/2017	8:02	SOIL	4oz JAR												07				
<hr/>																				
Relinquished by: (signature) <u>Aura E. Scharf</u>			Date / Time <u>8/11/17 4:48PM</u>			Received by: (signature) <u>Mike Jordan</u>			Date / Time <u>8/11/17 6:50</u>			Total # of containers <u>7</u>			Chain of Custody seals Y/N/NA			Seals intact? Y/N/NA		
Relinquished by: (signature)			Date / Time			Received by: (signature)			Date / Time			Received good condition/cold			Turn around time: <u>STD</u>			Notes		

Sample disposal instructions: Disposal @ \$2.00 each  Return to client \_\_\_\_\_ Pickup \_\_\_\_\_

**COC 151330**



# APPENDIX D

## Agronomy Testing



Anaheim Office  
Lab No: 17-221-0004  
August 16, 2017

Ninyo & Moore  
475 Goddard  
Irvine, CA 92618

Att: J. Schmidt

**PROJECT: UCR/ GREENHOUSE RIVERSIDE JOB # 210241001**

Attached are the results of the analysis performed on six soil samples that were collected from the above mentioned project site by the client and received by our laboratory on 8/09/17. Samples were analyzed for nutrient levels and soil suitability in preparation for a new landscape installation.

Analytical Results

The texture of the soil is classified as 'gravelly sandy loam' in B 1 and 'very gravelly loamy sand' in B 4 based off the USDA soil classification standards. The texture of the soil is 'sandy loam' in the remaining samples. The estimated infiltration rate is slow at 0.14 in. / hr. in the B 4 sample. The average estimated water infiltration rate for the remaining areas is 0.26 in. / hr. These values may vary with the degree of soil compaction. Organic content ranges from 0.5% to 2.3% by total dry weight.

The reaction of the soil in B 1, B 2, and B 6 is slightly alkaline ranging from 7.0 to 7.4 on the pH scale, which is in the preferred range for most ornamental plants. No pH adjustment is recommended. Qualitative lime is favorably absent.

The reaction of the soil in B 3 and B 5 ranges from slightly alkaline to moderately alkaline on the pH scale, which could cause some plants to show yellowing of foliage beginning with the younger growth. Qualitative lime is favorably low indicating that the pH is buffered in the alkaline range. Incorporating soil sulfur to a depth of 6 inches will adjust the pH downward. That change will happen slowly and plants that are sensitive to alkaline conditions should be avoided for this area of the project.

The reaction of the soil represented by B 4 is very strongly alkaline at 9.1 on the pH scale, which is higher than will typically occur naturally in our area. This, along with a strong suppression of extractable magnesium, suggests that this sample may have been contaminated with construction debris, which can yield a falsely high pH value. This will be discussed further in the comments section below.

Salinity (ECe) is safely low. Soluble sodium is slightly elevated at 11.5 meq/L in the B 4 sample. Boron is safe and ranges from low to sufficient for plant nutrition purposes.

Sodium is properly balanced by calcium and magnesium as indicated by the safely low sodium adsorption ratio (SAR) values. This balance is important for soil structure and water infiltration.

Nitrogen is sufficient in B 4 and low optimum in B 1. Nitrogen is low in the remaining samples. Phosphorous is sufficient in B 4 and B 1. Phosphorous is low optimum in B 6 while low elsewhere.

Potassium is low optimum in B 4 and low in the remaining samples. Calcium and magnesium are sufficient for plant nutrition.

Comments

Incorporating the following materials will improve fertility and soil chemistry. As noted above, the measured pH value in B 4 is unusually high and, along with a strong suppression of extractable magnesium, suggests sample contamination with construction debris. Some possibilities include concrete, stucco and road base. If this pH were truly representative of the soil in the root zone, few if any plants would be expected to perform well. To determine if this sample accurately represents the reaction of the soil in the root zone, we recommend collecting additional samples from this location to be analyzed for pH only (Waypoint Analytical testing code A11). Each of those samples should be a composite of soil collected from multiple spots. Be sure not to include the top 2 inches of soil, where construction debris tends to accumulate.

Planting recommendations are provided below, but do not take into account the very strongly alkaline reaction of the soil represented by this sample. If further testing shows strongly alkaline soil conditions, then soil sulfur for downward pH adjustment or soil replacement may be warranted.

Recommendations

Surface Soil Preparation for Turf, Groundcover and Mass Planting

If feasible, prior to amending the areas where severe compaction exists, the surface soil should be ripped or tilled to a 9-inch depth. Uniformly broadcast and blend the following with existing soil to a 6-inch depth.

Materials	Amount per 1000 sq.ft.	Location
Nitrogen fortified organic amendment (compost* or redwood or fir sawdust)	4 cu. Yards	All areas
Sulfur	6 lbs.	B 2 & B 6
Sulfur	10 lbs.	B 3 & B 5
Ammonium phosphate (16-20-0)	10 lbs.	B 2, B 3, B 5, B 6
Potassium sulfate (0-0-50)	7 lbs.	B 1, B 2, B 3, B 5, B 6

## Tree and Shrub Planting Guidelines

1. Excavate planting pits at least twice the diameter of the rootball.
2. The top of the rootball should be at or slightly above final grade.
3. To improve soil chemistry, uniformly blend 2 lbs. of iron sulfate per cubic yard of backfill soil. Handle iron sulfate with caution since it will severely stain moist concrete.
4. Organic material is not required in the backfill; however if you wish, the amended surface soil or a soil blend consisting of no more than 20% by volume organic matter can be placed in the upper 12 inches of backfill only. Soil below this depth should not contain any added organic matter because of the threat of plant disease and/or anaerobic soil conditions developing.
5. Place slow release fertilizer tablets in the upper 12 inches of backfill at manufacturer's recommended rates. If fertilizer amended soil is used as a backfill the addition of slow release fertilizer tablets is not necessary.
6. Do not cover the original rootball with other soil. Ideally, a temporary soil berm is often constructed around the outer edge of the rootball to help channel water into the rootball and then into surrounding soil until roots are established in the backfill and the rootball is no longer the sole source of water for the plant.
7. Ideally, a weed and turf free zone, preferably 2-3 ft. in diameter, should be maintained just beyond the diameter of the planting hole. A 2-4 inch deep layer of coarse mulch can be placed around the tree or shrub; mulch should be kept a minimum 4-6 inches from the trunk.

## Maintenance Fertilization

Uniformly broadcast sulfur coated urea at the rate of 5 lbs. per 1000 sq. ft. The first application should occur approximately 30 days after installing in Location B 1 and B 4. The first application should begin 60 days after planting in the remaining areas. Repeat applications every 60-90 days or as growth and color dictate. In early fall and spring, substitute a complete fertilizer such as 16-6-8, or equal, for the sulfur coated urea at the rate of 6 lbs. per 1000 sq. ft. to ensure continuing supplies of phosphorus and potassium. Tree and shrub plantings can be maintained with the above fertilizers; however, the frequency between applications should be every 120 days, with the first application 90 days after planting. Follow each fertilization with a thorough irrigation. When plants have become well established, fertilizer applications can be less frequent.

If we can be of any further assistance, please feel free to contact us.



Joe Kiefer

Project : UCR/Greenhouse  
Riverside  
Job #: 210241001

Report No : 17-221-0004  
Purchase Order :  
Date Recd : 08/09/2017  
Date Printed : 08/15/2017  
Page : 1 of 1

## COMPREHENSIVE SOIL ANALYSIS

Sample Description - Sample ID	Half Sat %	pH	ECe dS/m	NO <sub>3</sub> -N ppm	NH <sub>4</sub> -N ppm	PO <sub>4</sub> -P ppm	K ppm	Ca ppm	Mg ppm	Cu ppm	Zn ppm	Mn ppm	Fe ppm	Organic % dry wt.	Lab No.
	TEC	Qual Lime		Sufficiency Factors											
Location B-1 (0.5' - 1.5')	14	7.0	1.6	22	2	15	34	1705	260					0.6	09916
	113	None		0.8	0.9	0.3	1.2	1.3							
Location B-2 (0.5' - 1.5')	15	7.4	1.0	13	2	11	31	1457	235					0.6	09917
	99	Low		0.5	0.6	0.3	1.0	1.2							
Location B-3 (0.8' - 1.5')	12	7.7	0.3	4	2	6	22	1350	294					0.6	09918
	94	Low		0.3	0.4	0.2	1.1	1.8							
Location B-4 (2.2' - 3.2')	13	9.1	2.4	30	1	15	81	1349	55					2.3	09919
	72	Low		1.2	1.0	0.9	1.3	0.4							
Location B-5 (0.5' - 1.5')	17	7.6	0.4	11	2	9	33	1394	268					0.7	09920
	93	Low		0.4	0.5	0.3	0.9	1.3							
Location B-6 (0.5' - 1.5')	16	7.3	0.4	10	4	17	69	1176	212					0.5	09921
	78	Low		0.4	0.8	0.6	0.9	1.2							

Saturation Extract Values						SAR	Gravel %		Percent of Sample Passing 2 mm Screen					USDA Soil Classification	Lab No.
Ca meq/L	Mg meq/L	Na meq/L	K meq/L	B ppm	SO <sub>4</sub> meq/L		Coarse 5 - 12	Fine 2 - 5	Sand			Silt .002-.05	Clay 0-.002		
								Very Coarse 1 - 2	Coarse 0.5 - 1	Med. to Very Fine 0.05 - 0.5					
5.7	2.3	9.7	0.1	0.26	6.0	4.8	0.6	15.8	16.4	19.4	33.8	21.9	8.4	Gravelly Sandy Loam	09916
2.1	1.2	7.0	0.1	0.31	4.2	5.4	0.6	9.8	9.0	11.6	37	31.9	10.4	Sandy Loam	09917
0.8	0.7	1.6	0.1	0.16	0.6	1.9	0.2	11.6	19.4	19.2	33	19.9	8.4	Sandy Loam	09918
17.4	0.8	11.5	0.3	0.17	17.5	3.8	35.7	24.9	22.8	18.8	40	13.9	4.4	Very Gravelly Loamy Sand	09919
1.6	1.2	1.9	0.1	0.12	1.1	1.6	0.1	6.3	10.4	13.4	29.8	31.9	14.4	Sandy Loam	09920
1.3	0.9	1.5	0.1	0.17	1.0	1.4	0	5.4	10.6	11.0	34	31.9	12.4	Sandy Loam	09921

Sufficiency factor (1.0=sufficient for average crop) below each nutrient value. N factor based on 200 ppm constant feed. SAR = Sodium adsorption ratio. Half Saturation %=approx field moisture capacity. Nitrogen(N), Potassium(K), Calcium(Ca) and Magnesium(Mg) by sodium chloride extraction. Phosphorus(P) by sodium bicarbonate extraction. Copper(Cu), Zinc(Zn), Manganese(Mn) & Iron(Fe) by DTPA extraction. Sat. ext. method for salinity (ECe as dS/m), Boron (B), Sulfate(SO<sub>4</sub>), Sodium(Na). Gravel fraction expressed as percent by weight of oven-dried sample passing a 12mm(1/2 inch) sieve. Particle sizes in millimeters. Organic percentage determined by Walkley-Black or Loss on Ignition.

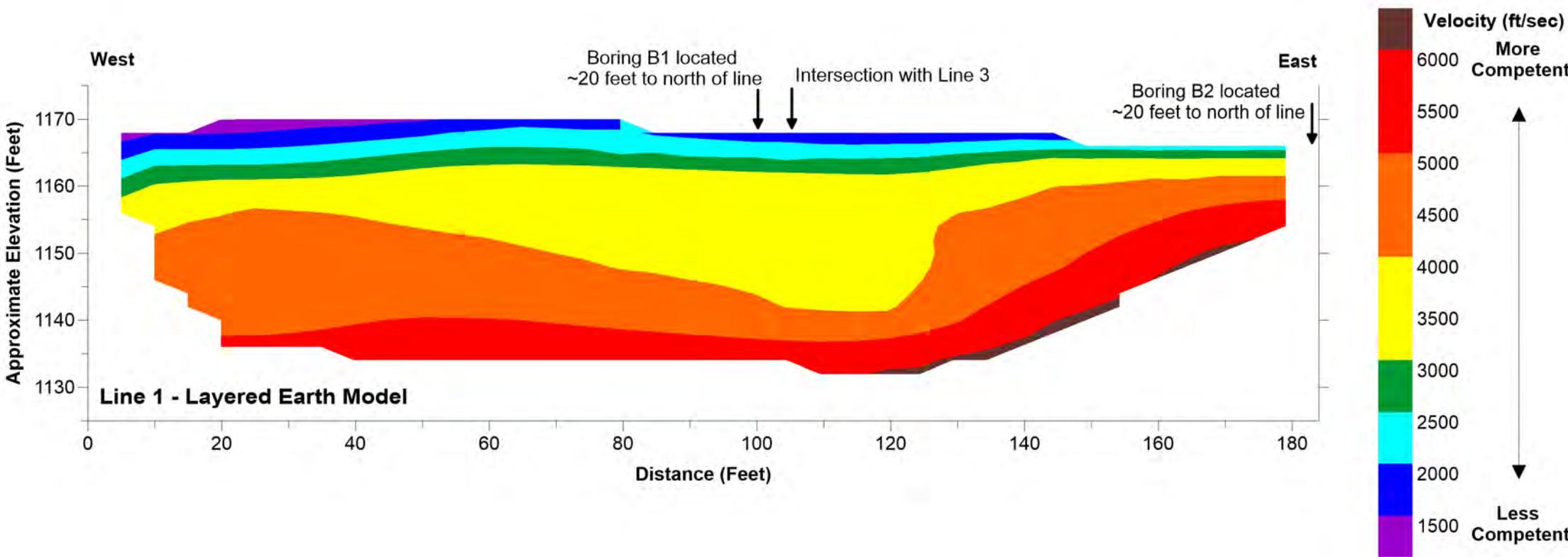
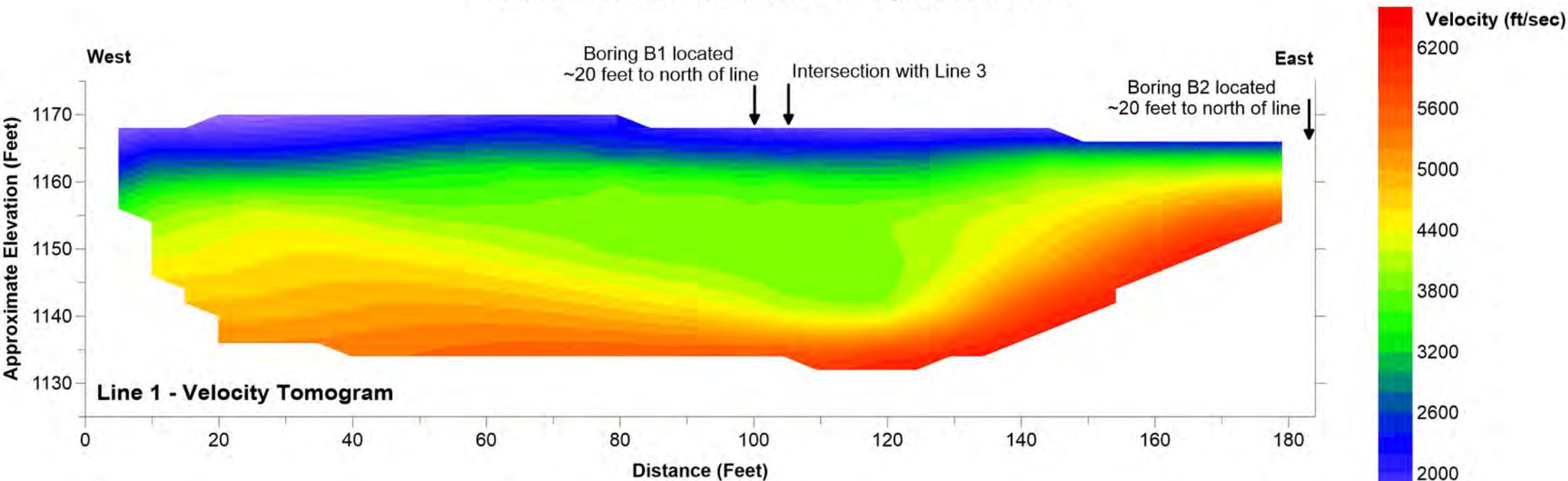
\* LOW, SUFFICIENT, HIGH



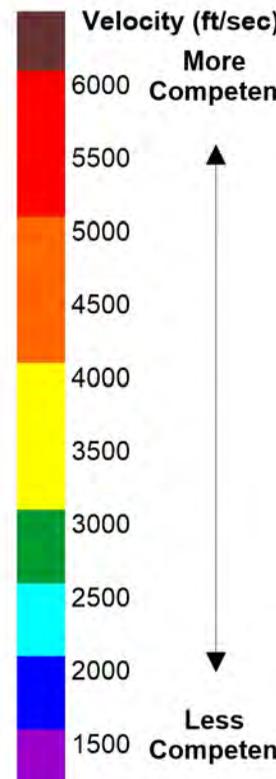
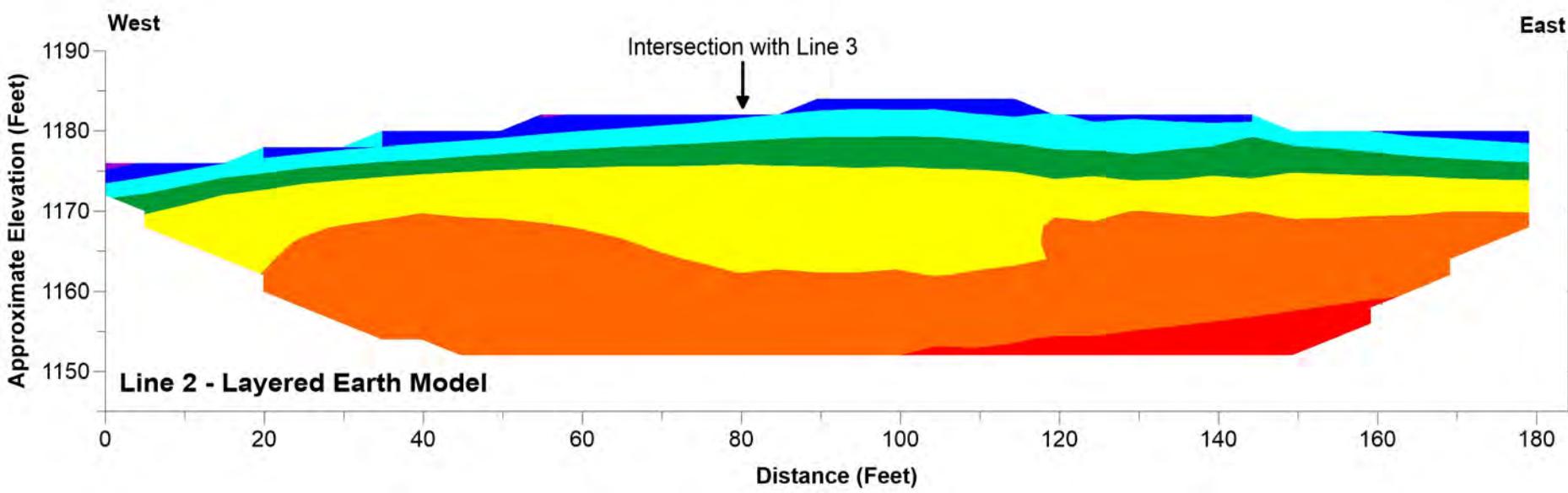
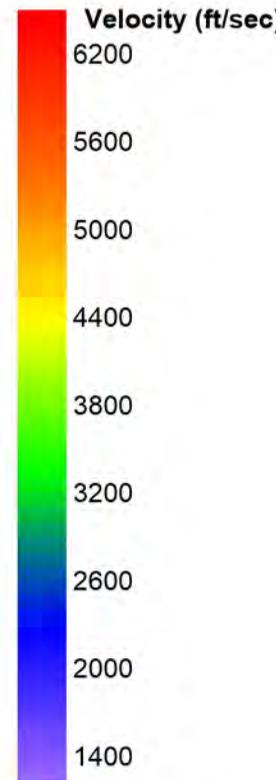
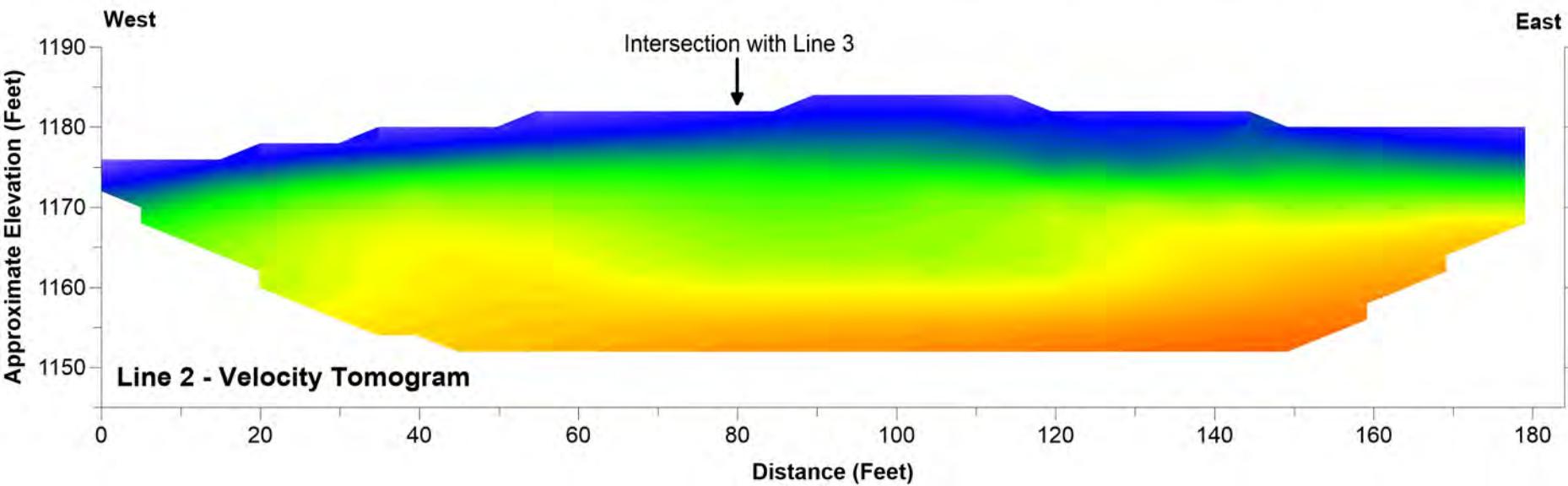
# APPENDIX E

## Seismic Profiles

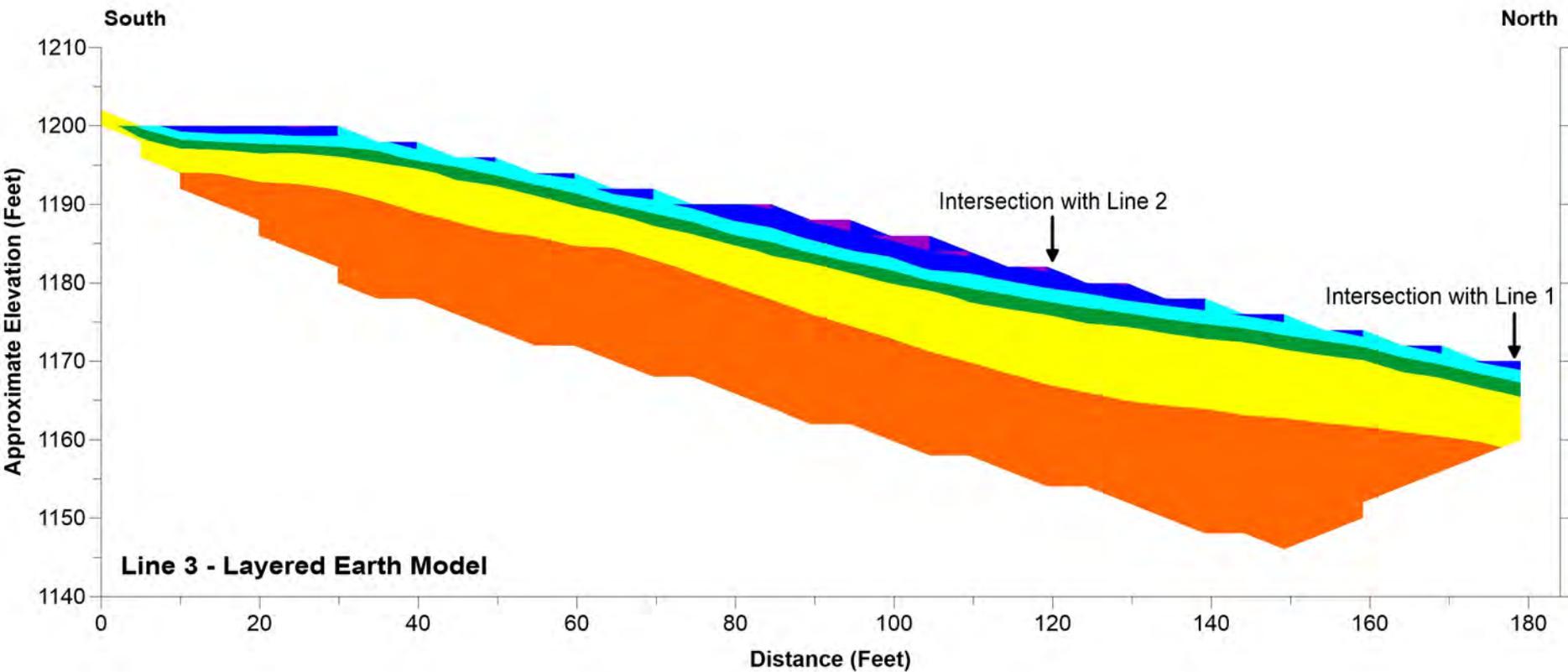
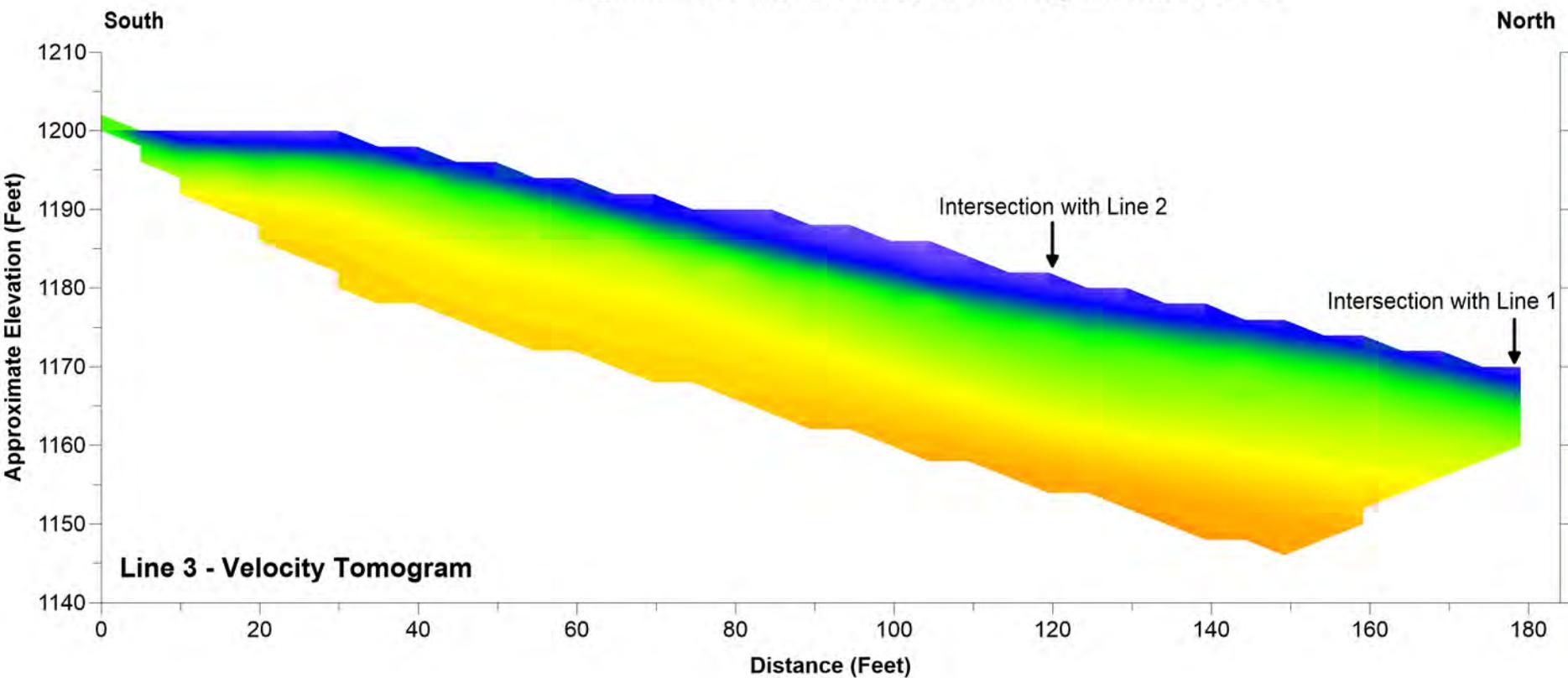
# Line 1 - Seismic Refraction Velocity Model Results



# Line 2 - Seismic Refraction Velocity Model Results



# Line 3 - Seismic Refraction Velocity Model Results





475 Goddard, Suite 200 | Irvine, California 92618 | p. 949.753.7070

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SAN JOSE | PHOENIX | TUCSON | PRESCOTT | LAS VEGAS | DENVER | BROOMFIELD | HOUSTON

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