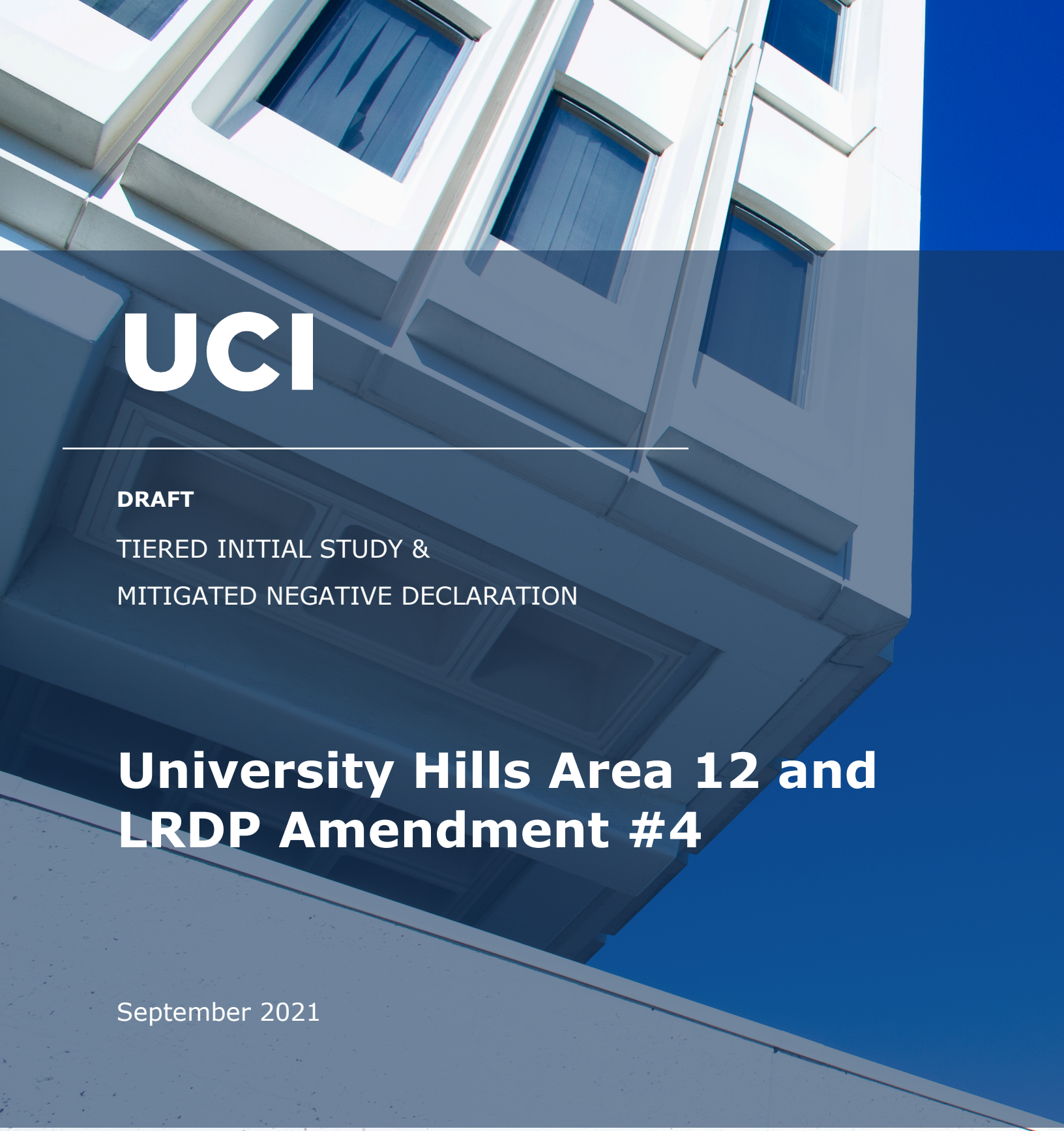

UCI

DRAFT

TIERED INITIAL STUDY &

MITIGATED NEGATIVE DECLARATION

University Hills Area 12 and LRDP Amendment #4

September 2021

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1.0 PROJECT INFORMATION

1.1 Project Title

University Hills Area 12 & LRDP Amendment #4

1.2 Lead Agency Name and Address

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

1.3 Contact Person and Phone Number

Lindsey Hashimoto, Senior Planner
(949) 824-8692

1.4 Project Location

The University of California, Irvine (UCI) is located in the city of Irvine, Orange County, California approximately four miles inland from the Pacific Ocean (see Exhibit 1-1). The project site is located in UCI's South Campus at the intersection of East Peltason Drive and Los Trancos Drive.

1.5 Custodian of the Administrative Record

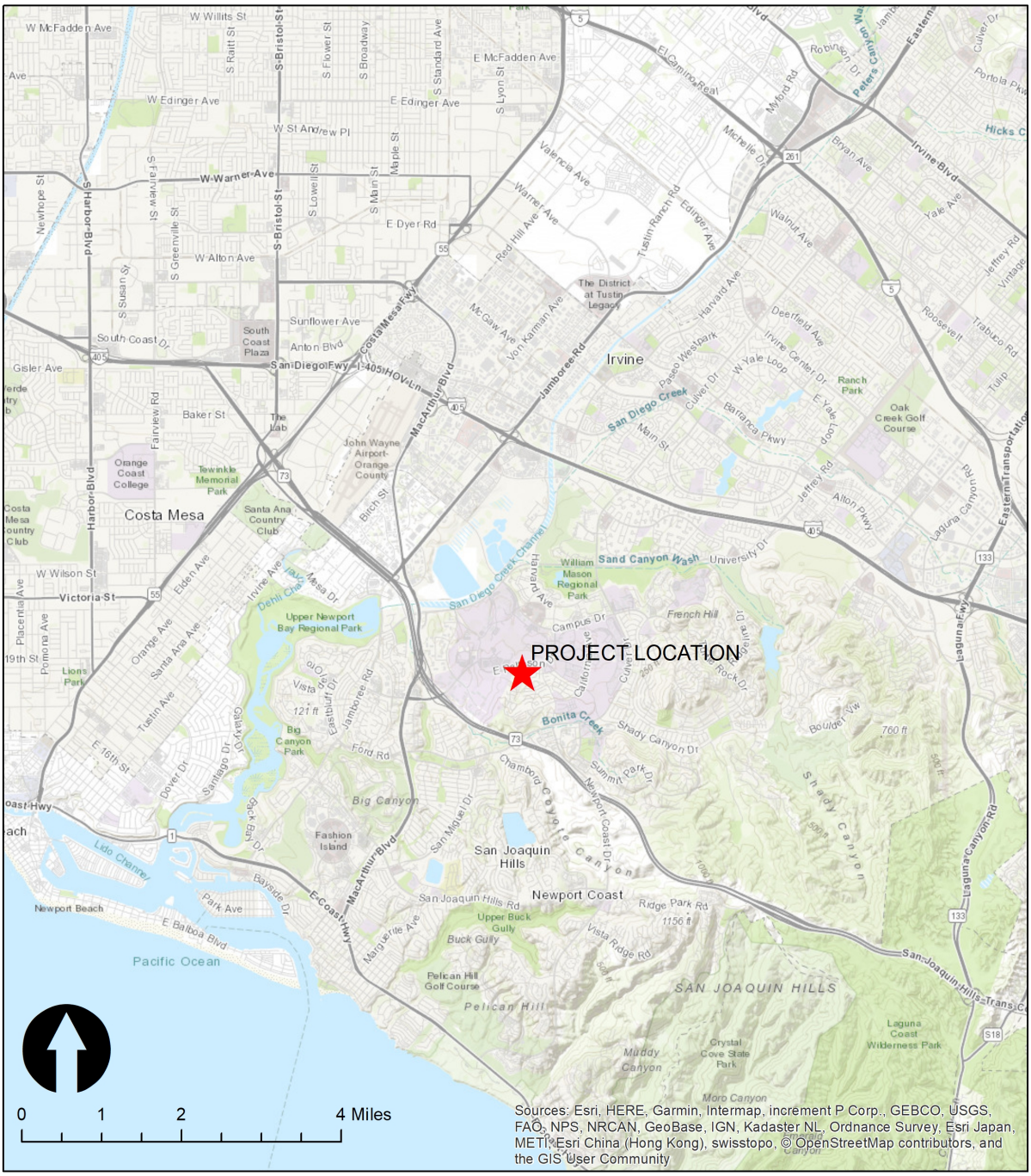
University of California, Irvine
Office of Campus Physical and Environmental Planning
4199 Campus Drive, Suite 380, Irvine, CA 92697-2325

1.6 Documents Incorporated by Reference

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

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

Exhibit 1-1
Regional Location



2.0 PROJECT DESCRIPTION

2.1 Environmental Setting and Surrounding Land Uses

The approximately 9.8-acre proposed project site is located within the faculty/staff housing community, University Hills, in the South Campus at the University of California, Irvine (UCI). Surrounding uses include the UCI Ecological Preserve to the west; University Hills faculty/staff housing to the east and south; and Engineering Gateway, California Institute for Telecommunications and Information Technology (CalIT2), University Club, Bren Hall, Multipurpose Science and Technology Building, and Interdisciplinary Science and Engineering Building across East Peltason Drive to the north. Los Trancos Drive bisects the project site into an east site (University Hills Area 12-1) and a west site (University Hills Area 12-2).

The existing on-site uses are the multi-family faculty/staff housing complex, Las Lomas Apartments; surface parking lots, Lot 15A and 15B; pedestrian pathways; playgrounds; and ornamental landscaping (see Exhibit 2-1 and 2-2).

2.2 Description of Project

The proposed project would demolish the existing 100 faculty/staff apartment units, approximately 107,000 gross square feet (GSF), that comprise the Las Lomas Apartments complex, Lots 15A and 15B, pedestrian pathways, playgrounds, and ornamental landscaping to construct up to 220 for-sale, attached faculty/staff housing units, up to 410,000 GSF (see Exhibit 2-3). Demolition of the east and west sides of Las Lomas Apartments, which has been vacant since 2020, and construction of the 220 for-sale units would be split across two phases, Area 12-1 and Area 12-2. Area 12-1 would demolish the 50 units on the east side of Las Lomas Apartments and construct approximately 110 for-sale, attached units. Area 12-2 would demolish the remaining 50 units on the west side of Las Lomas Apartments and construct approximately 110 for-sale, attached units. For the purposes of this CEQA document, both phases will be analyzed together in addition to the proposed LRDP Amendment #4 described in further detail in Section 2.3.

The structures would range between three-to-five-story stacked flats up to 65 feet. In accordance with the architectural guidelines of the 2010 UCI Physical Design Framework, the design of the buildings would be responsive to the context of surrounding buildings. The architectural design would use materials and colors that are compatible with adjacent buildings. Location and massing of the buildings have taken into consideration existing adjacent residences. Buildings nearest to existing homes have been reduced to three stories to account for light, wind, and shading. In addition, the buildings and landscaping would enhance or frame important view corridors, entry corridors, and the pedestrian views around the perimeter of the project site (see Exhibit 2-4).

As shown in Table 2.1-1, the proposed project would construct approximately 410,000 GSF of three-bedroom and two-bath units for a net increase of approximately 303,000 GSF for the site. Square footages and unit breakdowns by type would be finalized during the design phase.

Exhibit 2-1
Project Location and Adjacent Land Uses

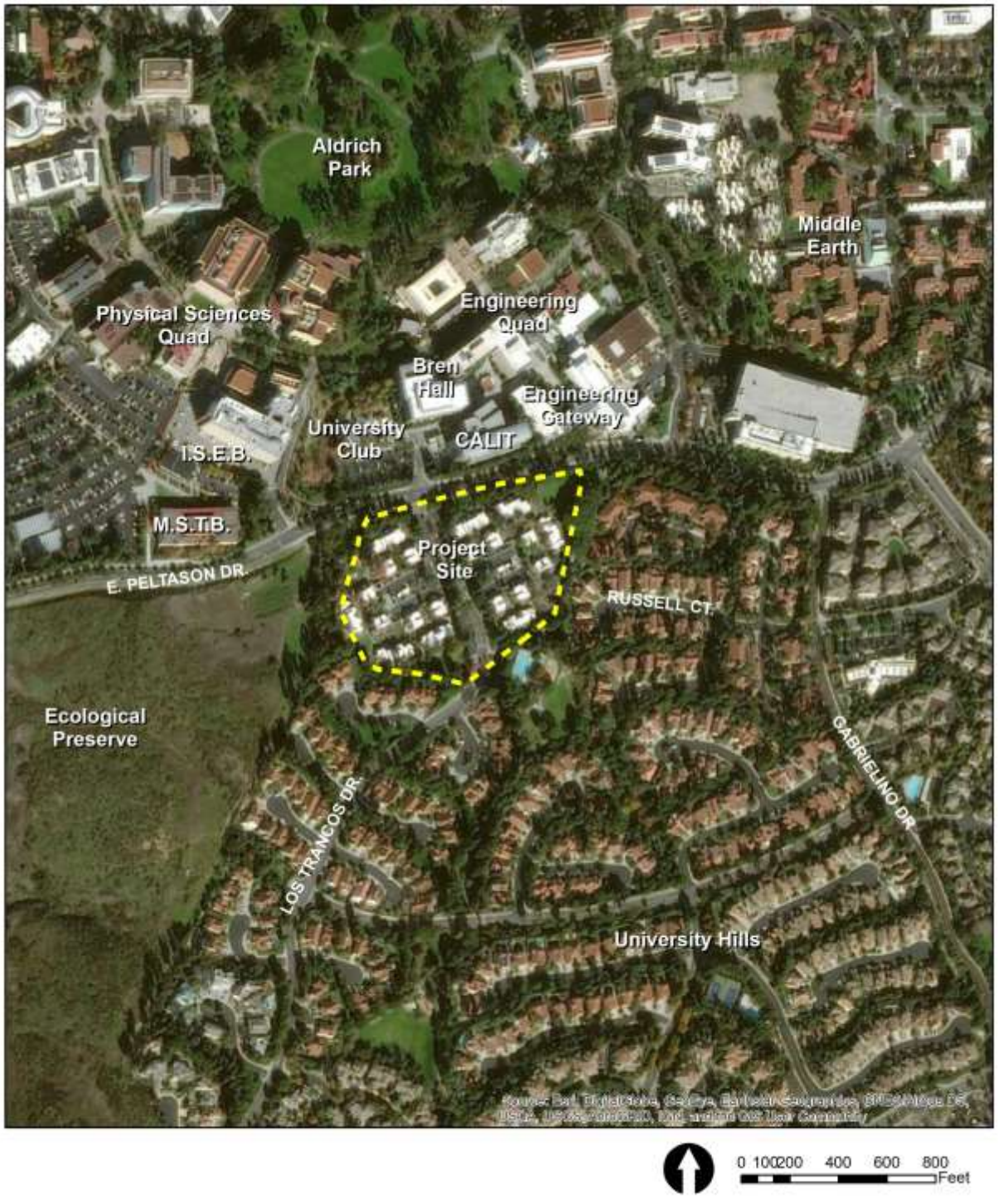


Exhibit 2-2
Existing Project Views

View 1: Southern boundary of the project site looking northwest toward Las Lomas complex.

View 2: Southern boundary of the project site looking west toward adjacent University Hills housing.

View 3: Western boundary of the project site looking west toward the UCI Ecological Preserve.

View 4: Northwestern boundary of the project site looking northwest toward the UCI Academic Core.

View 5: Northern boundary of the project site looking north toward Bren Hall and CalIT2 across East Peltason Drive.

View 6: Southeastern boundary of the project site looking south toward adjacent University Hills housing.

Exhibit 2-3
Conceptual Site Plan

Exhibit 2-4
Conceptual Elevations

SIDE ELEVATION

REAR ELEVATION

16-PLEX BUILDING

PA 12 STACKED FLATS

IRVINE, CALIFORNIA

IRVINE CAMPUS
HOUSING AUTHORITY

08.26.21


REAR ELEVATION
LEFT SIDE ELEVATION
RIGHT SIDE ELEVATION
FRONT ELEVATION
6-PLEX BUILDING
PA 12 STACKED FLATS
IRVINE, CALIFORNIA
IRVINE CAMPUS
HOUSING AUTHORITY

Table 2.1-1
Conceptual Square Footage by Unit Type

Unit Type & Plan Designation		BR/BA	No. Units	Square Footage
Stacked Flat	Plan 1	.3/2	8	1432
Stacked Flat	Plan 1x	.3/2	24	1553
Stacked Flat	Plan 1y	.3/2	8	1438
Stacked Flat	Plan 2	.3/2	20	1474
Stacked Flat	Plan 2x	.3/2	12	1554
Stacked Flat	Plan 3	.3/2	8	1886
Stacked Flat	Plan 3x	.3/2	32	2008
Stacked Flat	Plan 3y	.3/2	32	2028
Stacked Flat	Plan 4	.3/2	40	1962
Stacked Flat	Plan 4x	.3/2	36	2008

Per Section A, Green Building Design, of the UC Sustainable Practices Policy, the proposed project would meet or exceed LEED Silver equivalency in the GreenPoint Rated program and California Green Building Standards Code (Cal Green). In addition, the project would incorporate measures resulting in significant energy savings, construction waste reduction, recycled material use, and water conservation. To achieve this goal, design features that would be incorporated include dual glazed low-E3 glass windows, LED lighting, tankless water heaters, programmable thermostats, car charging circuits, whole house fans, energy efficient furnace and air conditioning units, and solar panels. Additional elements to increase energy efficiency and at a minimum achieve LEED Silver equivalency through the GreenPoint Rated program could be added to the design prior to the start of construction. Construction and operation of the proposed project would increase the amount of greenhouse gas emissions generated and energy consumed by the campus. However, as discussed further in Sections 4.5, Energy, and 4.6, Greenhouse Gas Emissions, the project would not impede the campus' ability to reduce emissions as required by the UC Carbon Neutrality Initiative and Section A of the UC Sustainable Practices policy.

2.2.1 Access

Construction staging is proposed to occur on the project site and would avoid the existing drainage and undeveloped area located westerly adjacent to the project boundary. Haul routes during construction would be along Los Trancos Drive, East Peltason Drive, and Bison Avenue, with site access via Los Trancos Drive.

Operational vehicle access to the project site would occur via the existing Los Trancos Drive, which bisects the project site and intersects and terminates at East Peltason Drive immediately to the north. Los Trancos Drive transitions into California Avenue approximately 0.5 mile to the south. Internal drive aisles would be constructed to access both the east and west sides from Los Trancos Drive. For guest parking, approximately 150 spaces would be provided on-site.

A minimum eight-foot wide, off-street bicycle and pedestrian path would be constructed along the south side of East Peltason Drive running from the western boundary to the eastern boundary of the project site. The path would also run parallel along the eastside of Los Trancos Drive and north-south along the eastern boundary of the project site adjacent to Schubert Court. A pedestrian bridge would be constructed over Peltason Drive that would connect to the existing campus bicycle/pedestrian network. On-site pedestrian access would be realigned but maintained allowing east-west access from the UCI Ecological Preserve to Schubert Court, and north-south access along Los Trancos Drive.

2.2.2 Utilities

Initial analyses indicate that existing utility systems have adequate capacity to serve the project and are available in the vicinity of the site. The proposed project would receive water services from the Irvine Ranch Water District (IRWD). Potable water would be connected through an existing 12-inch line located in Los Trancos Drive, recycled water through an existing 8-inch line in East Peltason Drive, sanitary sewer water through an existing 10-inch line in Los Trancos Drive, and fire water through a 12-inch line located in Los Trancos Drive. To provide on-site electricity, the houses would connect to a 12-kilovolt (kV) line that would connect to an existing pad mount equipment (PME) located on Peltason Drive. For telecommunications, the proposed project would connect to either AT&T or COX on Peltason Drive, as both currently provide service to University Hills. If any existing connections conflict with the project design, alternative and/or temporary utilities would be provided to all adjacent structures during relocation.

The housing units located east of Los Trancos Drive would drain into the existing 51-inch storm drain that runs parallel along the eastern project boundary line. The units to the west of Los Trancos Drive would drain westward via the on-site storm drains where outfall would likely occur at two points to the west of the project site. All storm drainage would be collected and treated on site through best management practices (BMPs) and could include, but not limited to, catch basins and Contech StormFilter Vaults, which are currently used throughout the University Hills community. Low impact development (LID) features would be implemented to retain stormwater flows to from the project site before released, which would be determined during the final design phase.

2.2.3 Project Phasing and Site Development

Area 12-1 demolition would begin in February 2022 and construction would start in September 2022 with anticipated completion in October 2023. Area 12-2 demolition would occur in July 2023 and construction would occur from 2023 to September 2025.

Grading for the proposed improvements would require cut and fill to create the building pads. The proposed project is anticipated to require approximately 24,562 cubic yards (CY) of excavation with 2,982 CY of soil export.

2.2.4 Population

Of the 100 units within Las Lomas, 12 units were for short-term lease only, available to visiting scholars/guest faculty that do not permanently reside within the local community. The remaining 86 units within the Las Lomas Apartments complex were for long-term residents, who were offered guaranteed housing in the recently completed University Hills' Miramonte Rental Townhomes, less than one mile southeast of the project site, or if they chose, could move into another University Hills property pending availability or be placed on the waiting list. The take rate of housing within University Hills was 68 leasers out of 88 leasers from Las Lomas (77 percent) that chose to remain within University Hills. Only 20 leasers out of 88 leasers (23 percent) from Las Lomas leases chose to find alternative housing off-campus. In the interim before demolition, Las Lomas Apartments would be utilized as a secondary site for quarantine beds for UCI students and would be a temporary, emergency use due to the COVID-19 pandemic. The Las Lomas Apartments would not be utilized for quarantine beds unless the primary site for quarantine beds located within the East Campus were at full capacity.

With implementation of the proposed project, which would construct 220 faculty/staff housing units, a conservative estimate of approximately 248 new faculty or staff[1] would be housed within the proposed project. Additionally, historic Irvine Campus Housing Authority demographic numbers have occupation of University Hills units at 3.0 persons per household; therefore, the overall population increase would be an additional 660 persons (approximately 248 faculty/staff and 412 non-UCI affiliated household members). Section 4.12, Population and Housing, of the IS/MND further discusses population.

2.3 LRDP Amendment #4 and Consistency with the LRDP

The applicable land use plan is the 2007 Long Range Development Plan (LRDP) and the University is the only agency with land use jurisdiction over projects located on the campus. The 9.8-acre project site has a land use designation of Faculty and Staff Housing in the LRDP, which is consistent with the proposed use of faculty/staff housing.

UCI is proposing to amend the 2007 LRDP to increase the on-campus faculty/staff housing capacity from 1,700 dwelling units to 1,830 units, an overall increase of 130 units. With the vacancy of the Las Lomas Apartments complex in 2020, the campus currently has 1,610 faculty/staff units within University Hills. As shown in Table 2.3-1, with the construction of 220 faculty/staff units as part of the proposed University Hills Area 12 project, a total of 1,830 faculty/staff units would be located within University Hills when construction is completed.

The increase in the faculty/staff housing program within the LRDP would be accommodated entirely through the construction of the proposed University Hills Area 12 project, which would demolish the existing Las Lomas faculty/staff housing apartment complex and increase the density of the project site from 11 units per acre to 24 units per acre. Construction of additional

[1] Information provided by Irvine Campus Housing Authority. Conservatively assumes all faculty or staff housed within the proposed project would be newly hired, and assumes multiple faculty or staff could live within one household.

faculty/staff housing would not occur on any other sites throughout the campus and, as such, this IS/MND analyzes the proposed project and the LRDP amendment together.

Table 2.3-1
UCI Faculty and Staff Housing Program

Housing Program Units	2021 Existing Units*	2007 LRDP Units	Proposed LRDP Amendment Units
Total	1,610	1,700	1,830
*Assumes vacancy of the Las Lomas complex by faculty and staff, which was vacated in 2020.			

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

Lead Agency

University of California

As a public agency principally responsible for approving or carrying out the proposed project, the University of California is the Lead Agency under CEQA and is responsible for reviewing and certifying the adequacy of the IS/MND and approving the proposed project and LRDP amendment. The Board of Regents of the University of California (The Regents) will consider design and CEQA approval of the proposed project in November 2021.

3.0 DETERMINATION

On the basis of the initial study that follows:

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

DocuSigned by:
Richard Demerjian
5D9C3C95F0494ED...

Signature

9/20/2021

Date

Richard Demerjian, Assistant Vice Chancellor
Campus Physical and Environmental Planning

Printed Name

For

4.0 EVALUATION OF ENVIRONMENTAL IMPACTS

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

- **"Potentially Significant Impact"** is appropriate if there is substantial evidence that the project's effect may be significant. If there are one or more "Potentially Significant Impacts," a Project EIR will be prepared.

- **"Project Impact Adequately Addressed in LRDP EIR"** applies where the potential impacts of the proposed project were adequately addressed in the LRDP EIR and mitigation measures identified in the LRDP EIR will mitigate any impacts of the proposed project to the extent feasible. All applicable LRDP EIR mitigation measures are incorporated into the project as proposed. The impact analysis in this document summarizes and cross-references (including section/page numbers) the relevant analysis in the LRDP EIR.

- **"Less Than Significant with Project-level Mitigation Incorporated"** applies where the incorporation of project-specific mitigation measures will reduce an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." All project-level mitigation measures must be described, including a brief explanation of how the measures reduce the effect to a less than significant level.

- **"Less Than Significant Impact"** applies where the project will not result in any significant effects. The effects may or may not have been discussed in the LRDP EIR. The project impact is less than significant without the incorporation of LRDP or project-level mitigation.

- **"No Impact"** applies where a project would not result in any impact in the category or the category does not apply. Information is provided to show that the impact does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer may be based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project specific screening analysis).

4.1 Aesthetics

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

Discussion

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

a) Scenic Vista: Less Than Significant Impact

The proposed project would demolish 100 existing faculty/staff apartment units to construct up to 220 for-sale, attached faculty/staff housing units. In addition, the LRDP amendment would increase faculty/staff housing capacity from 1,700 units to 1,830 units on the campus, which would accommodate the construction of the 220 units associated with the proposed project. There are no identified scenic vistas surrounding the project site or elsewhere on the UCI campus (LRDP EIR, page 4.1-6). Furthermore, the proposed project is located in the South Campus and is consistent with the UCI LRDP land use designation of Faculty and Staff Housing. Additionally, the proposed project would be a redevelopment of faculty/staff housing at a higher density; therefore, no change in the site's use would occur and would be consistent with the surrounding adjacent uses, which includes the faculty/staff housing community, University Hills, to the east and south, UCI Ecological Preserve to the west, and academic facilities across East Peltason Drive to the north. Additionally, no applicable regulations govern scenic quality of the viewshed surrounding the project area. Therefore, neither the proposed project nor the LRDP amendment that accommodates the project would affect a scenic vista and impacts would be less than significant. No mitigation is required.

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

The California Scenic Highway Mapping System indicates that there are no Officially Designated State Scenic Highways located within proximity to the project site. The closest Eligible State Scenic Highway – Not Officially Designated, Pacific Coast Highway, is located more than three miles southwest and is not visible from the campus. Therefore, neither the proposed project nor the LRDP amendment that accommodates the project would affect scenic resources within a state highway, and no impact would occur. No mitigation is required.

c) Visual Character: Less Than Significant Impact

As discussed in Section 2.0, Project Description, the proposed project would range between three-to-five story structures with a maximum height of 65 feet, which is similar in height to academic buildings located across Peltason Drive, and is consistent with LRDP land use designation of Faculty and Staff Housing. In accordance with the architectural guidelines of the 2010 UCI Physical Design Framework, the design of the buildings would be responsive to the context of surrounding buildings. The architectural design would use materials and colors compatible with adjacent buildings. Location and massing of the buildings would take into consideration the massing of existing adjacent homes, such as the buildings nearest the existing residences would be reduced to three-stories to account for light, wind, and shading. In addition, the buildings and landscaping would enhance or frame important view corridors, entry corridors, and the pedestrian views around the perimeter of the project site. Additionally, no applicable regulations govern scenic quality of the viewshed surrounding the project area. Therefore, the proposed project and LRDP amendment that accommodates the project would retain the visual character of the campus and surrounding uses and impacts would be less than significant. No mitigation is required.

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

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

Mitigation Measures

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

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

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

4.2 Air Quality

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

Discussion

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

a) Air Quality Management Plan Consistency: Less than Significant Impact

As part of its enforcement responsibilities, the Environmental Protection Agency (EPA) requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal,

state, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act (CCAA) requires an air quality attainment plan to be prepared for areas designated as nonattainment regarding the federal and state ambient air quality standards. Air quality attainment plans outline emissions limits and control measures to achieve and maintain these standards by the earliest practical date.

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

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

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

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

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The proposed project is consistent with the goals of the UCI Long Range Development Plan (LRDP) and Strategic Plan[1] and would not require a zone change or a City of Irvine General Plan (IGP)

[1] University of California, Irvine, *Strategic Plan*, 2016.

amendment. Figure 5-2 of the LRDP shows the project site as designated as Faculty and Staff Housing. The proposed project is consistent with the primary uses allowed under Faculty and Staff Housing land use category, which include residential facilities for University faculty and staff. Compatible uses include residential parking, childcare, pre-school and elementary school facilities, recreation facilities, community meeting space, and other residential support uses. Additionally, Figure A-3 in the IGP Land Use Element shows the project site in an Institutional land use zone suitable for public and educational facilities. The project's forecast population growth would be nominal and is already anticipated in the IGP (and accordingly the projections within the AQMP). Additionally, it would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. Thus, a less than significant impact would occur, as the project is also consistent with the second criterion.

The LRDP EIR found less than significant impacts related to consistency with the AQMP. UCI is proposing to amend its existing 2007 LRDP to accommodate the project and increase faculty/staff housing units by 130 for a total of 1,830 dwelling units.

Although the project proposes to amend the 2007 LRDP housing program to include additional faculty/staff housing units, the proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP. The project would redevelop the site at a higher density than what currently exists on-site. Higher building densities across the campus would accommodate the LRDP amendment's increased capacity. The LRDP amendment would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations.

In addition, the project would not require a zone change or a City of Irvine General Plan (General Plan) amendment and would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. The project also supports SCAG RTP/SCS and SCAQMD policies promoting infill development to reduce emissions. Thus, a less than significant impact would occur, as the project is also consistent with the second criterion.

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

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

Construction Emissions

Project construction activities would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the project area include ozone-precursor pollutants (i.e., ROG and NO_X) and PM_{10} and $PM_{2.5}$. Construction-generated emissions are short

term and temporary, lasting only while construction activities occur, but would be considered a significant air quality impact if the volume of pollutants generated exceeds the SCAQMD's thresholds of significance.

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

The duration of construction activities associated with the proposed project are estimated to last up to 44 months in two phases. The project would demolish the existing 100 dwelling units and is anticipated to require approximately 24,562 CY of excavation with 2,982 CY of soil export. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. See Appendix A: Air Quality Data for more information regarding the construction assumptions used in this analysis. The project's predicted maximum daily construction-related emissions are summarized in Table 4.2-1: Construction-Related Emissions. As shown in Table 4.2-1, all criteria pollutant emissions would remain below their respective thresholds.

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

Construction Year	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2022	3.71	39.75	29.93	0.07	9.07	5.27
2023	2.20	16.08	22.62	0.05	2.78	1.23
2024	2.06	15.10	22.14	0.05	2.69	1.15
2025	33.11	14.09	21.73	0.05	2.61	1.07
SCAQMD Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed SCAQMD Threshold?	No	No	No	No	No	No
Notes: SCAQMD Rule 403 Fugitive Dust applied. The Rule 403 reduction/credits include the following: properly maintain mobile and other construction equipment; replace ground cover in disturbed areas quickly; water exposed surfaces three times daily; cover stock piles with tarps; water all haul roads twice daily; and limit speeds on unpaved roads to 15 miles per hour. Reductions percentages from the SCAQMD CEQA Handbook (Tables XI-A through XI-E) were applied. No mitigation was applied to construction equipment. Refer to Appendix A for Model Data Outputs.						
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.						

Operational Emissions

The project's operational emissions would be associated with area sources (such as the use of landscape maintenance equipment and architectural coatings), motor vehicle use, and energy sources. Long-term operational emissions attributable to the proposed project are summarized in Table 4.2-2: Long-Term Operational Emissions. Note that emissions rates differ from

summer to winter because weather factors are dependent on the season and these factors affect pollutant mixing, dispersion, ozone formation, and other factors. As shown in Table 4.2-2, the project's operational emissions would not exceed SCAQMD thresholds for any criteria air pollutants. Therefore, the project's operational emissions would result in a less than significant long-term regional air quality impact.

Table 4.2-2
Long-Term Operational Emissions (Maximum Pounds Per Day)

Source	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_X)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions						
Area Source Emissions	9.63	3.31	19.49	0.02	0.35	0.35
Energy Emissions	0.11	0.92	0.39	0.01	0.07	0.07
Mobile Emissions	5.55	5.76	56.95	0.13	14.35	3.88
Total Emissions	15.29	9.99	76.83	0.16	14.77	4.31
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	No	No	No	No	No	No
Winter Emissions						
Area Source Emissions	9.63	3.31	19.49	0.02	0.35	0.35
Energy Emissions	0.11	0.92	0.39	0.01	0.07	0.07
Mobile Emissions	5.52	6.19	56.14	0.13	14.34	3.88
Total Emissions	15.26	10.42	76.02	0.16	14.77	4.31
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.						

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

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

Mobile Source Emissions. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern. NO_X and ROG react with sunlight to form O_3, known

as photochemical smog. Additionally, wind currents readily transport PM_{10} and $PM_{2.5}$. However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions were estimated using CalEEMod, as recommended by the SCAQMD. The project's trip generation estimates were based on trip generation rates from the project Traffic Study. The project would generate 1,980 average daily trips (ADT) (1,197 net ADT). As shown in Table 4.2-2, mobile source emissions would not exceed SCAQMD thresholds for criteria pollutants. Therefore, impacts associated with mobile source emissions due to the proposed project and LRDP amendment that accommodates the project would be less than significant. No mitigation is required.

c) Sensitive Receptors: Less Than Significant Impact

Localized Construction Significance Analysis

The nearest sensitive receptors to the project site are the single-family residences located approximately 50 feet (15 meters) east of the project site. To identify impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the Final *Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts from project-specific emissions.

Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, Table 10: Equipment-Specific Grading Rates, is used to determine the maximum daily disturbed acreage for comparison to LSTs. The appropriate SRA for the localized significance thresholds is the Central Orange County Coastal area (SRA 20) since this area includes the project site. LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables[2] for projects that disturb areas less than or equal to 5 acres. Project construction is anticipated to disturb a maximum of 4 acres in a single day.

Table 4.2-3
Equipment-Specific Grading Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Graded per 8-Hour Day	Operating Hours per Day	Acres Graded per Day
Site Preparation	Graders	1	0.5	8	0.5
	Dozers	3	0.5	8	1.5
	Scrapers	0	1.0	8	0
	Tractors/Loaders/Backhoes	4	0.5	8	2
Total Acres Graded per Day					4

[2] South Coast Air Quality Management District, Appendix C – Mass Rate LST Look-up Tables, 2009.

The SCAQMD's methodology states that "off-site mobile emissions from the project should not be included in the emissions compared to LSTs." Therefore, for the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The nearest sensitive receptors to the project site are the single-family residences located approximately 50 feet (15 meters) east of the project site. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 25 meters were utilized in this analysis for receptors closer than 25 meters. Table 4.2-4 presents the results of localized emissions during project construction. Table 4.2-4 shows that the emissions of these pollutants on the peak day of project construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the proposed project and LRDP amendment that accommodates the project would result in a less than significant impact concerning LSTs during construction activities. No mitigation is required.

Table 4.2-4
Localized Significance of Construction Emissions (Maximum Pounds Per Day)

Construction Activity	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Demolition (2022)	25.72	20.59	2.02	1.27
Site Preparation (2022)	33.08	19.70	8.90	5.23
Grading (2022)	38.84	29.04	5.05	2.86
Building Construction (2022)	15.62	16.36	0.81	0.76
Building Construction (2023)	14.38	16.24	0.70	0.66
Building Construction (2024)	13.44	16.17	0.61	0.58
Building Construction (2025)	12.47	16.08	0.53	0.50
Paving (2025)	8.58	14.58	0.42	0.39
Architectural Coating (2025)	1.15	1.81	0.05	0.05
SCAQMD Localized Screening Threshold (adjusted for 4 acres at 25 meters)	*175*	*1,461*	*12*	*8*
Exceed SCAQMD Threshold?	No	No	No	No
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.				

Localized Operational Significance Analysis

LSTs for receptors located at 25 meters for SRA 20 were utilized in this analysis. As the project site is 11 acres, the 5-acre LST threshold was conservatively used. The five-acre localized significance threshold is conservative as the thresholds increase with project size. The on-site operational emissions are compared to the LST thresholds in Table 12, which shows that the maximum daily emissions of on-site pollutants during project operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the project and LRDP amendment would result in a less than significant impact concerning LSTs during operational activities. No mitigation is required.

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

Activity	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
On-Site (Area and Energy Sources)	4.23	19.86	0.42	0.42
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 25 meters)	*197*	*1,711*	*4*	*2*
Exceed SCAQMD Threshold?	No	No	No	No
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.				

Criteria Pollutant Health Impacts

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

As previously discussed, project emissions would be less than significant and would not exceed SCAQMD thresholds (refer to Table 8 and Table 9). Localized effects of on-site project emissions on nearby receptors were also found to be less than significant (refer to Table 11 and Table 12). The LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. The LSTs were developed by the SCAQMD based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. The ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect public health, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. As shown above, project-related emissions would not exceed the regional thresholds or the LSTs, and therefore would not exceed the ambient air quality standards or cause an increase in the frequency or severity of existing violations of air quality standards. Therefore, sensitive receptors would not be exposed to criteria pollutant levels in excess of the health-based ambient air quality standards due to the proposed project or LRDP amendment that accommodates the project. No mitigation is required.

Carbon Monoxide Hotspots

An analysis of CO "hot spots" is needed to determine whether the change in the level of service of an intersection resulting from the proposed project would have the potential to result in exceedances of the CAAQS or NAAQS. It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner

fuels, and implementation of control technology on industrial facilities, CO concentrations have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. The SCAB was re-designated as attainment in 2007 and is no longer addressed in the SCAQMD's AQMP. The 2003 AQMP is the most recent version that addresses CO concentrations. As part of the SCAQMD CO Hotspot Analysis, the Wilshire Boulevard/Veteran Avenue intersection, one of the most congested intersections in Southern California with approximately 100,000 ADT, was modeled for CO concentrations. This modeling effort identified a CO concentration high of 4.6 ppm, which is well below the 35-ppm Federal standard. The proposed project considered herein would not produce the volume of traffic required to generate a CO hot spot in the context of SCAQMD's CO Hotspot Analysis. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection even as it accommodates 100,000 ADT, it can be reasonably inferred that CO hotspots would not be experienced at any intersections in the project vicinity resulting from 1,980 ADT attributable to the project. Therefore, impacts due to the proposed project and LRDP amendment that accommodates the project would be less than significant. No mitigation is required.

Construction-Related Diesel Particulate Matter

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

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment is highly dispersive and concentrations of DPM dissipate rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. The closest sensitive receptors to the project site are located approximately 50 feet from the project limits, and further from the major project construction areas.

Project construction involves phased activities in several areas across the site and the project would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of any proximate individual sensitive receptor to TACs. Additionally, construction projects contained on a site of this small size generally represent less than significant health risk impacts due to (1) limitations on the off-road diesel equipment able to operate and thus a reduced amount of generated DPM; (2) the reduced amount of dust-generating ground disturbance possible compared to larger construction sites; and (3) the reduced duration of construction activities compared to the development of larger sites.

Construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Sections 2485 and 2449), which reduce DPM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. Given the temporary and intermittent nature of construction activities likely to occur within specific locations in the project site (i.e., construction is not likely to occur in any one location for an extended time), the dose of DPM of any one receptor is exposed to would be limited. Therefore, considering the relatively short duration of DPM-emitting construction activity at any one location of the plan area and the highly dispersive properties of DPM, sensitive receptors would not be exposed to substantial concentrations of construction-related TAC emissions.

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

d) Emission Odors: Less than Significant Impact

The SCAQMD *CEQA Air Quality Handbook identifies* certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The proposed project would not include any of the land uses that have been identified by the SCAQMD as odor sources.

During construction-related activities, some odors (not substantial pollutant concentrations) that may be detected are those typical of construction vehicles (e.g., diesel exhaust from grading and construction equipment). These odors are a temporary short-term impact that is typical of construction projects and would disperse rapidly. The project would not include any of the land uses that have been identified by the SCAQMD as odor sources. Therefore, the proposed project and the LRDP amendment that accommodates the project would not result in substantial odors and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.3 Biological Resources

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

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

Discussion

Biological resources issues are discussed in Section 4.3 of the 2007 LRDP EIR. A site-specific Biological Resources Report was prepared by Carlson Strategic Land Solutions and is included as Appendix B of this IS/MND.

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

Direct impacts resulting from the proposed project and LRDP amendment consist of any ground-disturbing activities (i.e., vegetation removal, grading, paving, structures, landscaping, fuel modification zone, etc.). These areas would be permanently affected by the construction of the project. Calculations are based on the currently proposed development design (grading, brush management, and mitigation restoration areas).

Indirect temporary impacts to plant communities include the effects of fugitive dust created by

grading activities, vehicle construction traffic, or offsite discharge of surface water runoff with its associated erosion and sedimentation. Grading-related dust could settle on plant surfaces and indirectly inhibit metabolic processes such as photosynthesis and respiration. Grading-related erosion, runoff, sedimentation, soil compaction, and alteration of drainage patterns may affect plants by altering site conditions so that the location in which they are growing becomes unfavorable. Another example of indirect impacts includes the introduction and spread of invasive, exotic plants which could result in permanent indirect impacts to adjacent native plant communities.

Vegetation Communities

Table 4.3-1 lists the approximate total acreages of vegetation communities that would be impacted by project activities within the project boundary.

Table 4.3-1
Vegetation Community Impacts[1,2]

Vegetation Community	Existing Vegetation (acres)	Area 12-1 Impacts (acres)	Area 12-2 Impacts (acres)	Grand Total Impacts (acres)	Avoided (acres)
California Rose Shrubland Alliance	0.05	*0.00*	*0.00*	0.00	0.05
Toyon Shrubland Alliance	0.20	*0.00*	*0.10*	0.10	0.10
California buckwheat scrub Shrubland Alliance[1]	0.75	*0.00*	*0.00*	0.00	0.75
Non-Native Grasslands – Bromus Herbaceous Alliance[2]	3.69	*0.00*	*0.00*	0.00	3.69
Eucalyptus Woodland Alliance	0.73	*0.00*	*0.00*	0.00	0.73
Ornamental	6.05	*1.59*	*0.47*	2.06	3.99
Developed	29.43	*3.70*	*3.83*	7.53	21.90
TOTAL	40.9	*5.29*	*4.40*	9.69	31.21

1. California Buckwheat scrub shrubland alliance occurs only within the surrounding 300-foot buffer.
2. A total of 3.27-acres of Non-Native Grasslands Bromus Herbaceous Alliance occurs within the surrounding 300-foot buffer. The remaining 0.42-acres occurs on the project site.

Direct impacts would occur to the 2.06 acres of Ornamental community and 7.53 acres of Developed community onsite from both phases of the proposed project, which are not significant because these areas consist of built environment and not native vegetation communities. Further, the species found within the Ornamental and Developed communities include common plant species which are present in large numbers throughout the region and which removal is not considered significant.

Direct impacts would occur to 0.10 acres of Toyon Shrubland Alliance during the second phase, Area 12-2. Project implementation is not considered significant because while native, it does not contain any sensitive species, plants or wildlife, or represent sensitive habitats identified through CNDDB or CDFW sensitive plant communities. Per the field surveys conducted in May 2020, the toyon was planted intentionally to provide screening for the existing Las Lomas

Apartment complex. The alliance consists primarily of toyon scattered with eucalyptus trees (Eucalyptus sp.) and pine trees (Pinus sp.). The species found within the alliance includes common plant species which are present in large numbers throughout the region and the removal is not considered significant. No impacts are proposed to Non-Native Grasslands – Bromus Herbaceous Alliance, California buckwheat scrub Shrubland Alliance, California Rose Shrubland Alliance, or Eucalyptus Woodland Alliance.

Indirect impacts to the surrounding 300-foot buffer area could occur from construction related noise for both Phases; however, impacts would be less than significant because no sensitive habitat or sensitive species are located within the buffer area; the habitats are common in the Project Vicinity; the communities exhibit moderate level of disturbances; the area consists of non-native grasslands, coastal sage scrub, disturbed and developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust. In addition, the buffer area located directly to the west of the project site consists of grasslands, coastal sage scrub, and experimental vegetation projects associated with UCI and exhibits a moderate level of disturbance. Therefore, impacts to vegetation communities due to the proposed project and the LRDP amendment that accommodates the project would be less than significant. No mitigation is required.

Sensitive Plant Species

Sensitive plants include those listed, or candidates for listing, by the USFWS and CDFW; and species considered sensitive by the CNPS (particularly Lists 1A, 1B, and 2). Several sensitive plant species were reported in the vicinity of the Study Area based on the CNDDB, within the 8-quadrangle search. A total of thirteen sensitive plant species occur within the USGS 7.5' Tustin quadrangle.

However, of the thirteen sensitive plant species that could occur, none were observed on-site or the surrounding 300-foot Study Area. No suitable habitat for the plant species is found within the Study Area, and no observations of the species have been made; therefore, no impact due to the proposed project or the LRDP amendment that accommodates the project would occur. No mitigation is required.

Sensitive Wildlife Species

Special status wildlife species with the potential to occur within the Study Area were analyzed based on the species identified in USGS 7.5' Tustin quadrangle, distribution, habitat requirements, and existing site conditions (Appendix E). No special status wildlife was identified or observed within the project site during the May 2020 field surveys. However, sensitive wildlife species were determined to have the potential to occur on the project site; however, the Study Area lacks suitable habitat for the 20 of the 22 special status wildlife identified due to the built nature of the Study Area; therefore, no impacts are expected to occur. As shown in Table 4.3-2 below, indirect impacts to Yellow-Breasted Chat may occur as a result of project construction due to noise and ground disturbances. It was determined the Study Area contains

limited suitable habitat for Yellow-Breasted Chat within the drainage area west of the site, specifically within the California Rose Shrubland Alliance. The Yellow-Breasted Chat requires tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. The species nests are typically associated with streams, swampy ground, and the borders of small ponds. The drainage consists of large dense eucalyptus trees with sparse shrub layer and sparse herbaceous layer, lacking dense willow thickets or well-developed understories required for the species. The California rose patch that occurs within the drainage provides limited habitat for the Yellow-Breasted Chat, however, the drainage lacks wide riparian woodlands, well-developed understory, swampy grounds, or streams in which to nests.

Suitable habitat for the white-tailed kite (California Fully-Protected Species) exists on the project site for nesting and roosting and adjacent to the project site in an existing habitat preserve for hunting and foraging. While not observed during surveys for this report, white-tailed kite has been observed nesting on the project site by qualified birders including UCI biologists and Sea and Sage Audubon Society. Historically, a pair of white-tailed kites have been observed by UCI biologists and local birders nesting in the eucalyptus trees located offsite, specifically to the south of the project site, behind the homes off Blake Court adjacent to the NCCP/HCP Reserve area. In the 2021 Breeding Season, after the Las Lomas Apartments complex was vacated in 2020, a nesting white-tailed kite pair was observed within the ornamental trees in the developed area on the project site near the playground area, specifically Building 2018. Therefore, white-tailed kite is deemed present on the project site.

The proposed project has the potential to impact nesting/roosting habitat for the white-tailed kite. No suitable foraging habitat for the white-tailed kite is located on the project site, however, suitable foraging habitat is located off the project site in an adjacent protected habitat reserve. Since the project would not impact suitable foraging habitat on-site and the adjacent habitat reserve would remain and continue to provide suitable foraging habitat, no impacts to white-tailed kite foraging habitat would occur as a result of the proposed project.

The proposed project would remove existing ornamental trees found in the developed area used by white-tailed kite for nesting during the 2021 breeding season. No impacts would occur to the eucalyptus behind Blake Court, which is located offsite and to the south of the project site and is a known historical nesting site of the white-tailed kites. Implementation of mitigation measure BIO-1, which requires pre-construction nesting bird surveys, would reduce direct impacts to nesting white-tailed kite to less than significant. If an active nest were to be found prior to the start of construction, that nest would be protected through the end of nesting activity by a 500-foot protective no-work buffer established around the nest.

The proposed project would remove existing ornamental and non-native mature trees within the developed area that provide nesting opportunities for the white-tailed kite. The trees were planted as part of an ornamental landscape palette and do not constitute sensitive habitat or species. While removal of the existing trees is considered adverse due to prior nesting activity, the impact does not rise to a level of significance because white-tailed kite has adapted to urban

environments and numerous other nesting opportunities exist both on the project site, such as in the eucalyptus woodland that will remain, and in existing trees located adjacent to the project site where the species has historically nested. The white-tail kites only nested within the project site in 2021 since the Las Lomas Apartments complex was vacated in 2020, which left the site void of typical human presence. Furthermore, the proposed project includes new landscaping, including trees, that would provide for future white-tailed kite nesting habitat. To further minimize the adverse impacts and ensure future nesting habitat is provided, Mitigation Measure BIO-3 has been added to require the landscape palette for the proposed project to include tree species selected in consultation with campus biologists suitable for white-tailed kite nesting. Impacts to white-tailed kite nesting habitat is considered less than significant.

Table 4.3-2
Impact Analysis Summary for Special Status Wildlife Species

Species	Extent of Impact	Significance of Impact
Tricolor blackbird, Grasshopper sparrow, Burrowing owl, coastal cactus wren, Mexican long-tongued bat, western yellow-bellied cuckoo, yellow rail, western pond turtle, western mastiff bat, California black rail, Belding's savannah sparrow, Pacific pocket mouse, light-footed Ridgway's rail, California least tern, California Horned Lark, Coastal California gnatcatcher, Coastal Horned Lizard, Least Bell's Vireo, Red-Diamond Rattlesnake, and Western Spadefoot.	Suitable habitat is not found on the project site.	No Impact due to lack of suitable habitat onsite. Not observed during field surveys.
Yellow-breasted chat	Potentially suitable habitat is found on the project site.	Less than significant impact with pre-construction surveys. No species were observed on site during the May 2020 field surveys and limited suitable habitat occurs within the Study Area. Pre-construction surveys would ensure no direct and indirect impacts during vegetation removal and construction related noise impacts.
White-tailed kite	Suitable nesting habitat is found on the project site.	Less than significant impact with pre-construction surveys, no-work buffer should a nest be observed, and applicable Nesting Bird Management Plan. Suitable nesting habitat occurs onsite and suitable foraging habitat occurs within the Study Area. Pre-construction surveys, no-work buffer if a nest is observed, and Nesting Bird Management Plan would ensure no direct and indirect impacts during vegetation removal and construction related noise impacts.

Direct impacts associated with vegetation removal may occur to all avian species covered under the MBTA with the removal of potential nesting and foraging habitat. If project construction is scheduled to occur during the typical breeding bird season (January 1 through August 15 for raptors and February 15 through August 31 for all other avian species), direct removal of vegetation and indirect short-term noise effects to birds that may forage or nest onsite or within the buffer area may occur. In order to reduce direct and indirect impacts on nesting birds, if vegetation removal and/or construction activities were to occur during nesting bird season, a pre-construction nesting bird survey would be required within five (5) days of ground disturbances during typical nesting bird season to delineate any active nests found within the Study Area. Should an active nest be observed, a no-work buffer shall occur surrounding the active nest, until determined by the project Biologist it has become inactive. The implementation of project-specific mitigation measure BIO-1, the pre-construction nesting bird survey would prevent any direct or indirect impacts due to the removal of vegetation and construction-related noise on species covered under the MBTA.

Furthermore, since removal of vegetation could result in impacts to white-tailed kites and other raptor species, implementation of project-specific mitigation measures BIO-2 and BIO-3, which requires a qualified biologist on-site during vegetation clearing and performing periodic site inspections and preparation of a landscape plan in consultation with UCI biologists, would further reduce impacts. In addition, a Nesting Bird Plan would be prepared to further avoid impacts to the white-tailed kite and other avian species. The Nesting Bird Management Plan, in compliance with project-specific mitigation measure BIO-4, would establish no-work buffer areas based on species and requirements for monitoring of any observed nest(s) through fledging of young by a qualified biological monitor.

With implementation of project-specific mitigation measures BIO-1 through BIO-4, the proposed project and LRDP amendment that accommodates the project would ensure protection against direct impacts associated with vegetation removal or indirect impacts associated with construction related noise impacts for the Yellow-Breasted Chat, the white-tailed kite, and other avian species covered under the MBTA during the typical nesting bird season and would reduce potential impacts to special status species to less than significant.

b) Riparian Habitat: No Impact

c) Wetlands: No Impact

Qualified biologists surveyed the project site and an approximate 300-foot buffer surrounding the project site on May 27 and May 28, 2020. No riparian habitat or wetlands were observed on the project site itself, which has been previously developed with the existing Las Lomas Apartments complex. The project has been designed to avoid all direct impacts to Jurisdictional Waters, which are located west of the project site within the 300-foot Study Area.

The Waters of the State occurs to the west of the Apartment complex and contains existing storm drain inlets and outlet and associated headwalls. The Waters of the State have minimal biological value, composed mainly of eucalyptus trees and other non-native species. Typical

riparian corridors have the highest quality vegetation located in the center of the jurisdictional area, where flows tend to concentrate. The vegetation density and quality tend to decrease farther from the center of the drainage. The Waters of the State is heavily vegetated with eucalyptus trees with scattered native species, such as black willow, scrub oak, and California rose. The understory consists mainly of bare ground at the center of the drainage and where flows tend to concentrate, and instead these areas consist of fallen tree debris and heavy eucalyptus and pine leaf litter. The lack of understory vegetation and the majority of bare areas is due to eucalyptus cover and potential allelopathic toxins from the leaf litter. The understory areas that are vegetated include scattered non-native and native species, with the native species occurring primarily in the downstream end of the drainage. The quality of the drainage is characterized as poor due to the presence of dense non-native species, bare understory, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse.

The wetlands provide minimal biological value and are associated with the existing storm drain inlet pipe and outlet found on the downstream end of the drainage, as well as the surface flows that immerges approximately 50 linear feet from the upstream inlet. Overall, the wetlands consist of fallen tree debris and leaf litter with canopies over the areas consisting of Brazilian peppertree, common fig, and eucalyptus trees with minimal native herbaceous layer.

Indirect impacts to jurisdictional waters could occur due to erosion, siltation, and runoff during project construction. Minimization and avoidance measures include compliance with construction BMPs and NPDES requirements to minimize erosion, siltation and runoff to jurisdictional waters which are typically conditions outlined within project NPDES and SWPPP.

Therefore, because the proposed project and the LRDP amendment that accommodates the project would not be constructed within the Waters of the State, it would not have a substantial adverse effect on riparian habitat or wetlands and no impact would occur. No mitigation is required.

d) Wildlife Corridors: Less than Significant Impact with Project-level Mitigation Incorporated

The 2007 LRDP EIR determined that the campus is bordered by mixed use, residential uses, and roadways with limited wildlife movement corridors in the vicinity. The project site is also located more than one mile from drainage culverts that were placed under the State Route 73 (SR-73) Toll Road to support movement between the Bonita Canyon Wetland areas, San Joaquin Hills, and the NCCP Reserve System lands on the campus (LRDP EIR, page 4.3-47).

The Study Area supports limited habitat in the form of ornamental trees and is does not support regional wildlife movement. Further, the site is constrained to the north, east and south by the UCI campus and residential development which further constrains potential regional wildlife movement through the site. The Study Area is not identified within the NCCP/HCP as a regional corridor.

Although regional movement through this area is likely limited, there is some potential for smaller or "local" movement through the Study Area for more urbanized species. Movement on a smaller scale could occur within the site for species that are less restricted in movement pathway requirements or are adapted to urban areas [e.g., raccoon (*Procyon lotor*), and avian species in general). Habitat within the Study Area is dominated by the existing Las Lomas Apartment complex and ornamental trees with a large eucalyptus grove associated with the drainage to the west. As such, it may support some wildlife movement within the site and/or nearby areas for foraging and shelter. The home range and average dispersal distance of many of these species may be entirely contained within the site and immediate vicinity.

The site supports potential live-in and movement habitat for species on a local scale (i.e., some limited live-in and marginal movement habitat for reptile, bird, and mammal species), however, the site provides little to no function to facilitate wildlife movement on a regional scale. Furthermore, the site is not identified as a regionally important dispersal or seasonal migration corridor under the NCCP/HCP. Movement on a local scale likely occurs with species adapted to urban environments due to the surrounding development and disturbances in the vicinity of the site. Although implementation of the project would result in disturbances to local wildlife movement within the site, those species adapted to urban areas would be expected to persist on-site following construction.

The Study Area supports potential nesting and foraging habitat for migratory birds, in addition to potential nesting and foraging habitat for raptors. Based on the developed nature of the site, the quality of foraging habitat is considered to be low. Higher quality foraging habitat occurs in less developed areas with larger expanses of open space. Therefore, impacts to foraging habitat would be less than significant and no mitigation measures are required.

The site supports songbird and raptor nests due to the presence of a shrubs, ornamental species, and eucalyptus trees. Nesting activity typically occurs from January 1 through August 15 for raptors and February 15 through August 31 for all other avian species. Disturbing or destroying active nests is a violation of the MBTA (16 U.S.C. 703 et seq.). In addition, nests and eggs are protected under Fish and Wildlife Code Section 3503. As such, direct impacts to breeding birds (e.g. through nest removal) or indirect impacts (e.g. by noise causing abandonment of the nest) is potentially significant. Therefore, in compliance with the MBTA and project-specific mitigation measure BIO-1, the proposed project and LRDP amendment that accommodates the project would reduce impacts wildlife to a less than significant level.

e) Conflict with Applicable Policies: No Impact

As discussed above, with the incorporation of project-specific mitigation measure BIO-1, the proposed project would not conflict with applicable federal, state, or local policies for biological resources. Additionally, the University is the only agency with local land use jurisdiction over the project site. No specific UC policies have been adopted for the project site protecting biological resources. Therefore, the proposed project would not conflict with local policies protecting biological resources and no impact would occur. No mitigation is required.

f) Conflict with a Natural Community Conservation Plan or Habitat Conservation Plan: Less than Significant Impact with Project-level Mitigation Incorporated

While the Study Area is located within the NCCP/HCP Plan area, the project site is not located within any reserve or preserve designated area of the NCCP/HCP. However the UCI NCCP/HCP Preserve area, also known as the UCI Ecological Preserve, is located directly west of the project site. No direct impacts would occur to the NCCP/HCP preserve area since the project site is not located within designated preserve or reserve area and the site does not contain any special status vegetation.

Potential indirect impacts may occur to NCCP/HCP Preserve area due to construction related noise within the Study Area. If project construction is scheduled to occur during the typical breeding bird season (January 1 through August 15 for raptors and February 15 through August 31 for all other avian species), short-term noise effects to birds that may forage or nest within the buffer area may occur. In order to reduce indirect impacts, if vegetation removal and/or construction activities were to occur on the project site during nesting bird season, a pre-construction nesting bird survey would be required within five (5) days of ground disturbances during typical nesting bird season to delineate any active nests found within the Study Area. Buffer distance is 300 for songbirds and 500-feet for raptors and sensitive species. Therefore, in compliance with project-specific mitigation measure MM BIO-1, impacts due to the proposed project and LRDP amendment that accommodates the project would be reduced to a less than significant level.

Mitigation Measures

BIO-1: If grading or site disturbance is to occur between January 1 through August 15 for raptors and February 15 through August 31 for all other avian species, a nesting bird survey shall be conducted within all suitable habitat, onsite and within 300-feet surrounding the site (as feasible), by a qualified biologist within no more than 5 days of scheduled vegetation removal or start of ground disturbing activities, to determine the presence of nests or nesting birds. If active nests are identified, the biologist shall establish buffers around the vegetation (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers shall be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The onsite biologist shall review and verify compliance with the no-work buffers and verify the nesting effort has finished. Work can resume when no other active nests are found onsite or within the surrounding buffer area. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas of an active nest with preparation and implementation of a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared documenting mitigation monitoring compliance. If ground disturbances have not commenced within 5 days of a negative survey or if construction activities have stopped for 5 days or longer, the nesting survey must be repeated to confirm the absence of nesting birds.

BIO-2: A qualified biologist shall remain on-site during all vegetation clearing and perform periodic site inspections (1-2 times/week) during grading-related activities. Should a white-tailed kite nest be detected, a buffer of a minimum of 500 feet shall be established and no activity shall occur within the buffer zone until the biologist determines, and CDFW confirms, that all chicks have fledged and are no longer reliant on the nest site.

BIO-3: The landscape plans for the proposed project shall include tree species that provide suitable nesting habitat for the white-tailed kite, selected in consultation with campus biologist, such as, Western Sycamore (Plantanus Racemosa), London Planetree (Platanus x acerifolia), coast live oak (Quercus agrifolia), or similar trees with height that provide suitable nesting habitat for white-tailed kite.

BIO-4: Prior to the issuance of a grading permit, the Applicant, in conjunction with UCI Biologists, shall prepare a Nesting Bird Management Plan (NBP) that includes project specific avoidance and minimization measures to ensure that impacts to nesting birds do not occur and that the project complies with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 et seq.). In addition, Sections 3503, 3503.5, and 3513 of the FGC prohibit the take of all birds and their nests.

The NBP shall include, at a minimum: monitoring protocols; survey timing and duration; and project-specific avoidance and minimization measures including, but not limited to: project phasing and timing, monitoring of project-related noise, sound walls, and buffers. If an active bird nest is located, the Designated Biologist(s) shall implement and monitor specific avoidance and minimization measures as specified in the prepared NBP.

4.4 Cultural Resources

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

Discussion

Cultural resources issues are discussed in Section 4.4 of the 2007 LRDP EIR.

a) Historical Resources: No Impact

As discussed in Section 2.0, Project Description, the only existing on-site structural uses are the Las Lomas Apartments complex, which was originally constructed in 1982 for UCI faculty/staff multi-family housing and would not be considered an historical resource under Section 15064.5 of the CEQA Guidelines. Furthermore, LRDP EIR Table 4.4-2 lists campus buildings that would be at least 50 years old by the LRDP horizon year of 2025 and eligible for the Register of Historical Resources based on age (page 4.4-15). None of the structures listed are located on the project site. Therefore, neither the proposed project nor the LRDP amendment that accommodates the project would cause a substantial adverse change to an historical resource, and no impact occur. No mitigation is required.

b) Archaeological Resources: Project Impact Adequately Addressed in EIR

Recorded archaeological resources located within the UCI campus are summarized in Table 4.4-

1 of the 2007 LRDP EIR. Eight archaeological sites have been previously discovered in the South Campus. The nearest archaeological site is CA-ORA-179; however, this site is not located on or adjacent to the project site. Additionally, the project site has been previously impacted by the development of the existing Las Lomas complex located on-site. However, there is a possibility that archaeological remains could occur beneath the ground surface (LRDP EIR, page 4.4-4). Earth moving activities could possibly uncover previously undetected archaeological remains associated with prehistoric cultures, and a loss of a significant archaeological resource could result if such materials are not properly identified. Therefore, monitoring during grading by a qualified archaeologist through implementation of LRDP EIR mitigation measure Cul-1C would reduce impacts to archaeological resources to a less than significant level.

c) Human Remains: Less than Significant Impact

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

Mitigation Measures

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

a. Perform appropriate technical analyses;

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

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

4.5 Energy

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

Discussion

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

a) Energy Resources: Less than Significant Impact

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

The proposed project would be constructed to adhere to the UC Sustainable Practices Policy, which implements system-wide building standards to reduce energy use through green building design and clean energy. Although construction of the proposed project would increase the amount of energy use on the campus, as discussed in Section 2.0, Project Description, the project would incorporate various sustainable project design features (e.g., high performance attics, dual glazed low-E3 glass windows, LED lighting, tankless water heaters, programmable thermostats, car charging circuits, whole house fans, energy efficient furnace and air conditioning units, solar panels, etc.). In addition, the project would meet a minimum LEED Silver equivalent rating, per the UC Sustainable Practices Policy, through the Green Point Rating program.

In order for the campus to reach the carbon neutrality goal of zero emissions of scope 1 and 2 sources by 2025 and scope 3 sources by 2050, as required by the Carbon Neutrality Initiative and the UC Sustainable Practices Policy, the campus has identified a tiered set of system-wide strategies. These strategies include low-carbon growth through green building programs, reducing existing emissions through deep energy efficiency, replacing fossil fuel-based energy by deploying of on-site renewable energy and procuring off-site renewable energy, and mitigating the remaining carbon emissions through offset programs. Thus, the proposed project would not impede the campus' ability to reduce energy usage as it would achieve a high attainment of energy efficiency in accordance with UC policy.

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

4.6 Geology and Soils

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

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

Discussion

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

a) Expose People or Structures to:

i) Fault Rupture: Less than Significant Impact

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

ii) Seismic Ground Shaking: Less than Significant Impact

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

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

iii) Liquefaction: Less than Significant Impact

Liquefaction occurs when loosely deposited granular soils with silt and clay content undergoes loss of strength when subjected to strong earthquake-induced ground shaking. The 2007 LRDP EIR indicates that a majority of soils on the UCI campus are characterized as terraced deposits. However, due to the density of the shallow terrace deposits and the depth to the groundwater table, liquefaction is not likely. Therefore, compliance with the CBC, UC Seismic Safety Policy, and implementation of recommendations in the site-specific geotechnical investigation conducted during the design phase would reduce any potential hazards associated with liquefaction to a less than significant level. No mitigation is required.

iv) Landslide: Less than Significant Impact

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

b) Soil Erosion: Less than Significant Impact

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

The project site has been previously developed and constructed impermeable surfaces would be similar to the existing baseline; therefore, soil erosion is not anticipated to occur during project operation. As discussed in Section 4.8, Hydrology and Water Quality, in the event that storm water runoff were to increase, velocities would be reduced to preexisting conditions to the extent feasible (LRDP mitigation measure Hyd-1A). Therefore, impacts due to soil erosion would be less than significant. No additional mitigation is required.

c) Soil Instability: Less than Significant Impact

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

d) Expansive Soils: Less than Significant Impact

[1] https://maps.conservation.ca.gov/cgs/informationwarehouse/landslides/. Accessed August 24, 2021.

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

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

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

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

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

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

Mitigation Measures

LRDP EIR Cul-4A: Prior to grading or excavation for future projects that implement the 2007 LRDP and would excavate sedimentary rock material other than topsoil, UCI shall retain a

qualified paleontologist to monitor these activities. In the event fossils are discovered during grading, the on-site construction supervisor shall be notified and shall redirect work away from the location of the discovery. The recommendations of the paleontologist shall be implemented with respect to the evaluation and recovery of fossils, in accordance with mitigation measures Cul-4B and Cul-4C, after which the on-site construction supervisor shall be notified and shall direct work to continue in the location of the fossil discovery. A record of monitoring activity shall be submitted to UCI each month and at the end of monitoring.

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

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

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

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

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

4.7 Greenhouse Gas Emissions

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

Discussion

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

a) Greenhouse Gas Emissions: Less than Significant Impact

Short-Term Construction Greenhouse Gas Emissions

The proposed project would result in direct greenhouse gas (GHG) emissions from construction-related activities. The duration of construction activities associated with the proposed project are estimated to last up to 44 months. The project is anticipated to require approximately 24,562 cubic yards (CY) of excavation with 2,982 cubic CY of soil export. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. The approximate daily GHG emissions generated by construction equipment utilized to build the proposed project are included in Table 4.7-1. As shown in Table 4.7-1, project total construction-related activities would generate approximately 1,897 metric tons of carbon dioxide equivalent ($MTCO_2e$) of GHG emissions over the course of construction. Construction GHG emissions are typically summed and amortized

over the project's lifetime (assumed to be 30 years), then added to the operational emissions[1]. The amortized project emissions would be 63.23 $MTCO_2e$ per year. Once construction is complete, the generation of construction-related GHG emissions would cease.

Table 4.7-1
Construction-Related Greenhouse Gas Emissions

Category	$MTCO_2e$
Construction Year 1 (2022)	566
Construction Year 2 (2023)	602
Construction Year 3 (2024)	600
Construction Year 4 (2025)	129
Total Construction Emissions	1,897
30-Year Amortized Construction	63
Source: CalEEMod version 2020.4.0. Refer to Appendix C for model outputs.	

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the proposed project's life. The project's operational GHG emissions would result from direct emissions such as project-generated vehicular traffic, on-site combustion of natural gas, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power, the energy required to convey water to the project site and wastewater from the project site, the emissions associated with solid waste generated from the project site, and any fugitive refrigerants from air conditioning or refrigerators. The project's total operational GHG emissions are summarized in Table 4.7-2.[2]

As shown in Table 4.7-2, project operational GHG emissions, combined with construction-related GHG emissions, would generate approximately 2,870 $MTCO_2e$ annually. The proposed project would not exceed the SCAQMD GHG threshold of 3,000 $MTCO_2e$ per year. Additionally, the LRDP amendment represents a small proportion of the total buildout that was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of a previously identified

[1] The project lifetime is based on the standard 30-year assumption of the South Coast Air Quality Management District (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13,* August 26, 2009).

[2] It should be noted the energy emissions shown in Table 4.7-2 include emissions reductions in compliance with the 2019 Title 24 Building Energy Efficiency Standards which require rooftop solar systems for new residential development.

significant impacts evaluated in the LRDP EIR would occur. Therefore, GHG emissions due to the proposed project and the accompanying LRDP amendment would be less than significant. No mitigation is required.

Table 4.7-2
Project Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Construction Amortized Over 30 Years	63
Area Source	49
Energy	389
Mobile	2,247
Waste	51
Water and Wastewater	71
Total	2,870
SCAQMD Project Threshold	*3,000*
Exceeds Threshold?	No
Source: CalEEMod version 2020.4.0. Refer to Appendix C for model outputs.	

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

As discussed above, the UC Sustainable Practices Policy establishes goals and policies to reduce GHG emissions from various sources at the UCI campus. In addition, the UCI Climate Action Plan (CAP) in cooperation with AB 32 has guided an array of climate action protection strategies and projects to reduce UCI GHG emissions. The purpose of the CAP is to identify UCI's long-term vision and commitment to reduce its GHG emissions in support of UC Sustainable Practices Policy and campus sustainability goals. These commitments include reduction of GHG emissions to 1990 levels by the year 2020 (a reduction of approximately 49 percent from projected emissions), climate neutrality by the year 2025 (for on-site combustion of fossil fuels and purchased electricity), and climate neutrality by the year 2050 (for UCI commuters and university-funded air travel). The CAP does not contain project-specific GHG thresholds.

The proposed project would be subject to the UC Sustainable Practices Policy. The policy includes goals in various areas of sustainable practices including green building design, clean energy, climate protection, sustainable transportation, sustainable building operations for campuses, zero waste, sustainable procurement, sustainable foodservices, sustainable water systems and sustainability on the UCI campus. It should be noted that while these areas of policy are applicable to new buildings and major renovations on the UCI campus, not all areas of the policy are applicable to housing projects. Specific to the proposed project, all new buildings are required to outperform the California Building Code energy-efficiency standards (Title 24) by 20 percent,

meet or exceed U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) "Silver" standards or equivalent, utilize energy efficient lighting and appliances, reduce outdoor water use by 50 percent, and reduce commuting emissions through sustainable transportation programming. The project would also not use natural gas for space and water heating if feasible. Accordingly, the project would meet the 2020 California Building Standards Code. In addition, the project would be assessed by the Green Point Rating program and would earn a minimum of a "silver rating." The project would also not conflict with any of the policy's sustainable practices, including campus-wide clean energy, energy efficiency, and renewable energy, and sustainable transportation.

The project is subject to the practices in the UC Sustainable Practices Policy. Development of the project would provide dwelling units for UCI faculty/staff on the project site. The project's GHG emissions (2,870 $MTCO_2e$ per year) would be below SCAQMD thresholds. While not included in the UCI CAP, the proposed project is consistent with the climate protection goals and measures adopted in the CAP and would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce GHG emissions, including Title 24, AB 32, and SB 32. Therefore, neither the proposed project nor the LRDP amendment that accommodates the project would conflict with a greenhouse gas plan, policy, or regulation. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.8 Hazards and Hazardous Materials

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

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

Discussion

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

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

b) Release of Hazardous Materials: Less than Significant Impact

As discussed in the 2007 LRDP EIR, with an increase in on-campus facilities, expansion of maintenance and cleaning services would be required, which would increase the use, handling, storage, and disposal of products routinely used in building maintenance, some of which may contain hazardous materials. This, in turn, would result in an increase in the amount of hazardous materials that are used, stored, transported, and disposed and could increase the

potential for an accident or accidental release of hazardous materials or wastes (LRDP EIR, page 4.6-21).

The proposed project would redevelop existing faculty/staff housing, and no change in use would occur. For long-term, operation of the proposed project, minor quantities of hazardous materials would be stored, used, disposed of, and released that are typical of residential housing, such as pesticides, fertilizers, interior and exterior paints, and cleaning supplies. None of the substances that are associated with residential uses are considered acutely hazardous and are currently used throughout the existing University Hills community. Due to the minor quantities that would be utilized consistent with residential uses, long-term transport, use, disposal, or release of hazardous materials would be less than significant.

Temporary, short-term related hazards for the project would include transport, storage, use, and disposal of asphalt, fuels, solvents, paints, thinners, acids, curing compounds, grease, oil, fertilizers, coating materials, and other hazardous substances used during construction. The contractor ensures responsibility, as part of their contract, that hazardous materials and waste are handled, stored, and disposed of in accordance with all applicable Federal, State, and local laws and regulations and routine construction control measures (LRDP EIR, page 4.6-7).

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

As discussed in the LRDP EIR, campus buildings could contain hazardous materials associated with built infrastructure that could be disturbed during renovation or demolition, such as asbestos or lead-based paint (LRDP EIR, 4.6-28). However, the Las Lomas complex was constructed in 1982 and acutely hazardous materials are unlikely to occur within the building's infrastructure. However, assessment and testing of potential hazardous materials within the Las Lomas complex would occur prior to demolition. If testing results in findings of hazardous materials, a demolition plan would be prepared in compliance with all federal, State, and local regulations and would ensure potential impacts to surrounding users would be reduced to a less than significant level.

Therefore, compliance with Federal, State, and local regulation would reduce potential impacts due to the proposed project and LRDP amendment that accommodates the project from the release of hazardous materials to a less than significant level. No mitigation is required.

c) Proximity to Schools: No Impact

There are no schools located within one-quarter mile of the project site. The nearest school, Tarbut V' Torah, is located approximately 0.8 miles southeast of the project site. Additionally, the proposed project would construct residential housing, which is compatible with educational uses,

and would not release significant levels of hazardous materials as discussed in 4.8(a) and 4.8(b) above. Therefore, the proposed project and the LRDP amendment that accommodates the project would not emit large hazardous emissions in proximity to a school and no impact would occur. No mitigation is required.

d) Hazardous Materials Sites: No Impact

The 2007 LRDP EIR concluded that there are no recorded hazardous sites on or within the immediate vicinity of the project site, and according to the UCI Office of Environmental Health and Safety, no other known hazardous materials sites exist on-site (LRDP EIR, page 4.6-32).

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

e) Airport Land Use Plan: Less than Significant Impact

The campus is located in the John Wayne Airport (JWA) planning area, which is approximately two miles northwest of the project site. The Airport Land Use Commission for Orange County has established Runway Protection Zones (RPZ) for JWA, also called Accident Potential Zones (APZ), which define the surrounding areas that are more likely to be affected if an aircraft-related accident were to occur. Those zones do not extend to the campus, including the project site, and because most aircraft accidents take place on or immediately adjacent to the runway it is unlikely that aircraft operating at JWA pose a safety threat to the campus. Additionally, as reported in the 2007 LRDP EIR, no accidents have occurred near the campus within the past 26 years nor since the time of writing (page 4.6-33).

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

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

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

h) Wildland Fires: Less than Significant Impact

The LRDP EIR concluded that areas prone to wildfire within the campus are vegetation communities, such as coastal sage scrub and grassland (4.6-35), which are flashy fuels that can easily ignite during dry conditions. The proposed project site is located in the South Campus and surrounded by urban development along three sides while to the east is the UCI Ecological Preserve. However, although the proposed project is located adjacent to open space, the final design would be reviewed by the UC Fire Marshal and would comply with the California Building Code, which includes fire protection. In addition, the project would connect to the 12-inch fire water line located in Los Trancos Drive and fire access would be provided via an internal loop road that has at minimum two egress/ingress locations intersecting with Los Trancos Drive. Fire access would also be provided from East Peltason Drive along the north boundary of the project site and Los Trance Drive. Additionally, a minimum 100 feet of defensible space, in coordination with the Orange County Fire Authority (OCFA), would be implemented and maintained annually to serve as a fire protection barrier in the event that a fire would occur within the open space to the west of the project site. Therefore, the proposed project and the LRDP amendment that accommodates the project would not subject people or structures to a significant risk of loss, injury, or death involving wildland fires and impacts would be less than significant. No mitigation is required.

Mitigation Measures

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

4.9 Hydrology and Water Quality

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

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

Discussion

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

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

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

Potential water quality impacts during the construction would be stockpiled soils and materials stored outdoors on or adjacent to the project site during construction. Pollutants associated with these construction activities that could result in water quality impacts include soils, debris, other materials generated during site clearing and grading, fuels and other fluids associated with the equipment used for construction, paints and other hazardous materials, concrete slurries, and asphalt materials. These pollutants could impact water quality if washed, blown, or tracked off site to areas susceptible to wash off by storm water or non-storm water and could drain to one or

more of the local receiving waters (LRDP EIR, page 4.7-21). Landscaping could also result in water quality impacts due to the use of fertilizers. If discharged, they could adversely affect aquatic plants and animals downstream in receiving waters through a reduction in oxygen levels and an increase in eutrophication (LRDP EIR, page 4.7-21).

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

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

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

b) Groundwater: No Impact

UCI does not use groundwater and instead is provided water by the Irvine Ranch Water District (IRWD). This issue was adequately addressed in the 2007 LRDP Initial Study and further analysis in the EIR was not required (LRDP EIR, page 4.7-27). Therefore, the proposed project and LRDP amendment would not affect groundwater tables and no impact would occur. No mitigation is required.

c) Substantially Alter the Existing Drainage Pattern which would:

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

For the project site, features that control run-off volumes and durations to minimize or eliminate erosion and siltation would be depicted on final construction plans. Any slopes would be landscaped and energy dissipaters and other control devices would be incorporated as needed. Drainage control measures would be implemented during rough grading to ensure that discharge volumes and durations are controlled on newly graded channels. Standard construction strategies

such as desiltation basins, rip-rap, sandbag chevrons, straw waddles, etc. would be incorporated into the project's SWPPP both during and after grading. Therefore, potential erosion or siltation impacts during and following construction would be reduced to less than significant levels through compliance with the conditions of the General Construction Storm Water Permit and LRDP EIR mitigation measures Hyd-2A and 2B. Therefore, erosion impacts due to the proposed project and LRDP amendment that accommodates the project would be reduced to a less than significant level.

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

The project site has been previously developed with existing faculty/staff housing, the Las Lomas Apartments. Therefore, the rate and amount of runoff from the proposed project would be similar to rate and runoff of the current Las Lomas complex. However, to avoid flooding impacts on- or off-site, the proposed storm drain system would be designed with the drainage criteria set forth in the LRDP mitigation measures Hyd-1A and Hyd-2B. The drainage system would be built to maintain or reduce peak runoff from 25-year and 100-year storm events. Additional hydrological analysis would be conducted as part of the final design process to specify all primary and secondary drainage control facilities required to satisfy flood control criteria, as well as site design, mechanical, structural, and non-structural measures to filter pollutants from site runoff prior to discharge into the existing storm drain networks. Therefore, with implementation of LRDP EIR mitigation measures Hyd-1A and Hyd-2B, impacts to the alteration of the drainage pattern due to the proposed project and LRDP amendment that accommodates the project would be reduced to a less than significant level.

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

The housing units located east of Los Trancos Drive would drain into the existing 51-inch storm drain that runs parallel along the eastern project boundary line. The units to the west of Los Trancos Drive would likely drain westward via the on-site storm drains where outfall would occur at two points into the UCI Ecological Preserve to the west of the project site. All storm drainage would be collected and treated on site through best management practices (BMPs) and could include, but not limited to, catch basins and Contech StormFilter Vaults, which are currently used through the University Hills community. Low impact development (LID) features may be implemented to retain stormwater flows to the west of the project site before release into the existing undeveloped property, which would be determined during the final design phase. Through these measures, the quantity of site drainage would remain unchanged post-development and the water quality of the site drainage would be similar to or better than the existing Las Lomas Apartments development.

Due to the increase in impervious surfaces, additional runoff would be calculated during the design phase of the project and the collection system would be upgraded to increase capacity, if needed. The on-site drainage system, which may include on-site retention basins or LID features,

would be designed to provide sufficient capacity to manage the level of water runoff anticipated upon completion of construction. Therefore, with implementation of Hyd-1A and Hyd-2B, impacts due to the proposed project and LRDP amendment that accommodates the project would be less than significant.

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

The campus is located approximately four miles from the Pacific Ocean where sufficient evacuation notice would be provided by the West Coast and Alaska Tsunami Warning Center in the occurrence of a tsunami. Seiches are typically associated with landlocked bodies of water, and none exist on the campus or within the surrounding adjacent community. Inundation by mudflows would not occur because the project site is not located at the base of a foothill and the site is surrounded on three sides by existing development (LRDP EIR, pages 4.7-24 through 25). Therefore, impacts due to the proposed project and LRDP amendment that accommodates the project would be less than significant. No mitigation is required.

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

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

As described in responses provided above, the proposed project would not be a substantial source of pollutants that would result in significant impacts to surface water or groundwater quality. The proposed project would prepare a SWPPP and WQMP and would not impede the Santa Ana RWQCB Basin Plan. Therefore, in compliance with the water quality regulations, the proposed project and LRDP amendment that accommodates the project would not conflict with a water quality control plan or groundwater management plan and no impact would occur. No mitigation is required.

Mitigation Measures

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

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

current water quality regulatory requirements.

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

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

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

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

- All new storm drain inlets and catch basins within the project site shall be marked with prohibitive language and/or graphical icons to discourage illegal dumping per UCI standards.

- Outdoor areas for storage of materials that may contribute pollutants to the storm water conveyance system shall be covered and protected by secondary containment.

- Permanent trash container areas shall be enclosed to prevent off-site transport of trash, or drainage from open trash container areas shall be directed to the sanitary sewer system.

- At least one treatment control is required for new parking areas or structures, or for any other new uses identified by UCI as having the potential to generate substantial pollutants. Treatment controls include, but are not limited to, detention basins, infiltration basins, wet ponds or wetlands, bio-swales, filtration devices/inserts at storm drain inlets, hydrodynamic separator systems, increased use of street sweepers, pervious pavement, native California plants and vegetation to minimize water usage, and climate controlled irrigation systems to minimize overflow. Treatment controls shall incorporate volumetric or flow-based design standards to mitigate (infiltrate, filter, or treat) storm water runoff, as appropriate.

4.10 Land Use and Planning

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

Discussion

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

a) Divide an Established Community: No Impact

The proposed project would demolish 100 existing faculty/staff apartment units to construct up to 220 for-sale, attached faculty/staff housing units. In addition, the LRDP amendment would increase faculty/staff housing capacity from 1,700 units to 1,830 units on the campus, which would accommodate the construction of the 220 units associated with the proposed project. Surrounding uses include the UCI Ecological Preserve to the west; University Hills faculty/staff housing to the east and south; and Engineering Gateway, California Institute for Telecommunications and Information Technology (CalIT2), University Club, Bren Hall, Multipurpose Science and Technology Building, and Interdisciplinary Science and Engineering Building to the north across East Peltason Drive. The existing on-site uses are the multi-family faculty/staff housing, Las Lomas; Los Trancos Drive; surface parking lots, Lot 15A and15B; pedestrian pathways; playgrounds; and ornamental landscaping.

The proposed project would not affect the land use pattern of the surrounding community, either on- or off-campus. The proposed project is located within the existing University Hills community and would redevelop faculty/staff housing. No change in the use would occur and is consistent with the surrounding University Hills housing to the east and south, the academic buildings across East Peltason Drive to the north, and the UCI Ecological Preserve to the west.

No existing bikeways or roadways would be removed as part of the project. Instead, a minimum

eight-foot wide, off-street bicycle and pedestrian path would be constructed along the south side of East Peltason Drive running from the western boundary to the eastern boundary of the project site. The path would also run parallel along the eastside of Los Trancos Drive and north-south along the eastern boundary of the project site adjacent to Schubert Court. A pedestrian bridge would be constructed over Peltason Drive that would connect to the existing campus bicycle/pedestrian network. On-site pedestrian access would be realigned but maintained allowing east-west access from the UCI Ecological Preserve to Schubert Court, and north-south access along Los Trancos Drive. Therefore, the proposed project would not divide an established community and no impact would occur. No mitigation is required.

b) Conflict with an Applicable Land Use Plan, Policy, or Regulation: Less Than Significant Impact

The proposed project would demolish 100 existing faculty/staff apartment units to construct up to 220 for-sale, attached faculty/staff housing units. In addition, the LRDP amendment would increase faculty/staff housing capacity from 1,700 units to 1,830 units on the campus, which would accommodate the construction of the 220 units associated with the proposed project.

The applicable land use plan is the 2007 LRDP and the University is the only agency with land use jurisdiction over projects located on the campus. The project site is designated as Faculty and Staff Housing in the LRDP, which is consistent with the proposed use of faculty/staff housing and associated amenities.

With the adoption of the LRDP amendment as currently proposed and analyzed within this document, which would accommodate construction of the proposed University Hills Area 12 project only, then the proposed project would be consistent with the LRDP. No additional physical changes would result due to the LRDP amendment, including no changes would occur to other building capacities or increases in student or staff/faculty population capacities. Therefore, neither the proposed project nor the LRDP amendment would conflict with an applicable land use plan adopted for the purpose of mitigating an environmental effect and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.11 Noise

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

Discussion

Noise issues are discussed in Section 4.9 of the 2007 LRDP EIR. A project-specific Noise Assessment was prepared by Kimley-Horn and Associates, Inc. and is included as Appendix D of this IS/MND.

a) Noise Standards: Less than Significant Impact

While UCI is not subject to local regulations, UCI strives to meet community standards to ensure compatibility between UCI land uses and operations and the local community. The City of Irvine's noise standards are relevant to UCI to establish guidelines and evaluating noise impacts.

City of Irvine General Plan

The City of Irvine General Plan (Irvine General Plan or IGP) Noise Element (Irvine Noise Element) identifies sources of noise and provide objectives and policies that ensure that noise from various sources does not create an unacceptable noise environment. Since the campus is located in the City of Irvine, the City of Irvine's land use compatibility noise standards are relevant to UCI in establishing guidelines and evaluating impacts. The Irvine Noise Element sets forth general community noise and land use compatibility guidelines, as shown in Table 4.11-1. Sound levels up to 65 A-weighted decibels, community noise equivalent level (dBA CNEL) are normally compatible for single-family residential, transient lodging, and park uses. Sound levels up to 60 dBA CNEL are normally compatible for institutional uses such as hospitals, churches, libraries, and schools.

City of Irvine Noise Ordinance

Construction Noise

IMC Section 6-8-205(A) indicates that construction activities may occur between 7:00 a.m. and 7:00 p.m. Mondays through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activities shall be permitted outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the Chief Building Official or his or her authorized representative. Trucks, vehicles, and equipment that are making, or are involved with, material deliveries, loading, transfer of materials, equipment service, maintenance of any devices or appurtenances for (or within) any construction project in the City, shall not be operated or driven on City streets outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the City. Any waiver granted shall take into consideration the potential impact upon the community. No construction activity would be permitted outside of these hours, except in emergencies including maintenance work on the City rights-of-way that might be required.

Interior and Exterior Noise Standards

The City of Irvine Noise Ordinance (Title 6, Division 8, Chapter 2, Section 6-8-204 of the Irvine Municipal Code [IMC]) also provides exterior and interior noise limit thresholds for certain periods of time. Table 4.11-2, presents noise standards published in Section 6-8-204 of the City of Irvine Noise Ordinance.

Table 4.11-1
City of Irvine Land Use Compatibility Guidelines

Land Use Category	Uses	Energy Average (CNEL)							
		≤	55	60	65	70	75	80 ≥	≤
Residential[3]	Single-Family, Multiple-Family	A	A	B	B	C	D	D	A
	Mobile Home	A	A	B	C	C	D	D	A
Commercial Regional Family	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D	A
Commercial Regional Community	Commercial retail, Bank, Restaurant, Movie theater	A	A	A	A	B	B	C	A
Commercial Community Industrial & Institutional	Office building, Research & development Professional office, City office building	A	A	A	B	B	C	D	A
Commercial Recreation Institutional General	Amphitheater, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D	B
Commercial Recreation	Children's amusement park, Miniature golf, Go-cart track, Health club, Equestrian center	A	A	A	B	B	D	D	A
Commercial Community Industrial General	Automobile Service station, Auto dealer, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B	A
Institutional General	Hospital, Church, Library, School classrooms	A	A	B	C	C	D	D	A
Open Space	Parks	A	A	A	B	C	D	D	A
	Golf courses, Nature centers, Cemeteries, Wildlife reserves, Wildlife habitat	A	A	A	A	B	C	C	A
Agricultural	Agriculture	A	A	A	A	A	A	A	A

Notes:
Zone A (Clearly Compatible): Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Zone B (Normally Compatible): New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Zone C: Normally Incompatible: New construction or development should normally be discouraged. If new construction or development does proceed, a detailed analysis or noise reduction requirements must be made and needed noise insulation features must be included in the design.
Zone D (Clearly Incompatible): New construction or development should generally not be undertaken.

Source: City of Irvine, *City of Irvine General Plan*, Supp. No. 9, July 2015.

Table 4.11-2
City of Irvine Noise Ordinance Levels

Noise Zone	Exterior or Interior?	Time Period	Noise Levels (dBA) for a Period Not Exceeding				
			30 min	15 min	5 min	1 min	0 (anytime)
I: *All hospitals, libraries, churches, schools, and residential properties*	Exterior	7:00 a.m. – 10:00 p.m.	55	60	65[1]	70	75
		10:00 p.m. – 7:00 a.m.	50	55	60	65[1]	70
	Interior	7:00 a.m. – 10:00 p.m.			55	60	65
		10:00 p.m. – 7:00 a.m.	-	-	45	50	55
II: All professional office and public institutional properties.	Exterior	Any time	55	60	65	70	75
	Interior	Any time	-	-	55	60	65
III: All commercial properties excluding professional office properties.	Exterior	Any time	60	65	70	75	80
	Interior	Any time	-	-	55	60	65
IV: All industrial properties.	Exterior	Any time	70	75	80	85	90
	Interior	Any time	-	-	55	60	65

Notes:
1. This standard does not apply to multi-family residence private balconies. Multi-family developments with balconies that do not meet the 65 CNEL are required to provide occupancy disclosure notice to all future tenants regarding potential noise impacts.
2. It shall be unlawful for any person at any location within the City to create any noise or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person which causes the noise level when measured on any property within designated noise zones either within or without the City to exceed the applicable noise standard.
3. Each of the noise standards specified above shall be reduced by five dBA for impact, or predominant tone noise or for noises consisting of speech or music.
4. In the event that the noise source and the affected property are within different noise zones, the noise standards of the affected property shall apply.

Source: City of Irvine, *City of Irvine Municipal Code*, *Title 6, Division 8, Chapter 2, Section 6-8-204*, codified through Ordinance No. 20-02, enacted February 11, 2020.

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the uses surrounding the construction site. Heavy equipment would operate at approximately 150 feet from existing residences to the south and east. The California Institute of Telecommunications and Information Technology is located approximately 240 feet to the north and the University Club is located approximately 350 feet to the north, across East Peltason Drive. Open space is adjacent to the west.

Construction activities would include demolition, site preparation, grading, building

construction, paving, and architectural coating. Such activities may require dozers, concrete/industrial saws, and excavators during demolition; dozers and tractors during site preparation; trenching equipment during trenching and utilities; graders, dozers, tractors, scrapers, and excavators during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. The demolition and grading phases generally have the highest noise levels but the shortest duration of all construction phases. Typical noise levels associated with individual construction equipment are listed in Table 4.11-3.

As noted above, the closest sensitive receptors to the project are the residences adjacent to the south and east, which are as close as approximately 150 feet from the construction activity area. The equipment used near the existing residences include jack hammers, heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. The highest noise level from these types of equipment is 88 dBA at 50 feet. Construction activities would generally be limited to weekday daytime hours between 7:00 a.m. and 7:00 p.m. Monday through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays and grading activities would conform, although not required, to the time-of-day restrictions of Irvine Municipal Code (IMC) Section 6-8-205(A). Noise impacts from project-related construction activities occurring within or adjacent to the project site would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to the noise-sensitive receptors.

Although UCI is not subject to City ordinances, the project would adhere to the City of Irvine's noise ordinance regarding construction.[1] IMC Section 6-8-205(A) indicates that construction activities may occur between 7:00 a.m. and 7:00 p.m. Mondays through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays. While the City establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels. The City's permitted hours of construction are required in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant impact. However, this analysis conservatively uses the FTA's threshold of 80 dBA (8-hour L_{eq}) to evaluate construction noise impacts.[2]

[1] https://icha.uci.edu/wp-content/uploads/2020/05/Area-12-Q-and-A-final-5-7-2020.pdf. Accessed September 10, 2021.

2 Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, Table 7-2, Page 179, September 2018.

Table 4.11-3
Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 25 feet from Source	Typical Noise Level (dBA) at 50 feet from Source[1]	Typical Noise Level (dBA) at 150 feet from Source[1]
Air Compressor	86	80	70
Backhoe	86	80	70
Compactor	88	82	72
Concrete Mixer	91	85	75
Concrete Pump	88	82	72
Concrete Vibrator	82	76	66
Crane, Derrick[2]	94	88	78
Crane, Mobile	89	83	73
Dozer	91	85	75
Generator	88	82	72
Grader	91	85	75
Impact Wrench	91	85	75
Jack Hammer	94	88	78
Loader	86	80	70
Paver	91	85	75
Pile-driver (Impact)[2]	107	101	91
Pile-driver (Sonic)[2]	101	95	85
Pneumatic Tool	91	85	75
Pump	83	77	67
Roller	91	85	75
Saw	82	76	66
Scraper	91	85	75
Shovel	88	82	72
Truck	90	84	74

1. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1+20Log(d_1/d_2)$
Where: dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance.
2. Equipment not required for project construction.

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

The noise levels calculated in Table 4.11-4 show estimated exterior construction noise at the closest receptors. Residential uses are located adjacent to the east and south of the project site. UCI buildings are located to the north, across East Peltason Drive. Construction noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and receptor. The noise levels shown in Table 4.11-4 conservatively do not account for attenuation from the perimeter walls along each of the existing sensitive receptors to the south and east.

Actual construction-related noise activities would be lower than the conservative levels described above and would cease upon completion of construction. Due to the variability of construction activities and equipment for the project, overall construction noise levels would be intermittent and would fluctuate over time. These assumptions represent the worst-case noise scenario

because construction activities would typically be spread out throughout the project site, and thus some equipment would be farther away from the affected receptors. In addition, the noise modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels would fluctuate and generally be brief and sporadic, depending on the type, intensity, and location of construction activities. It is also noted that project construction equipment would be equipped with functioning mufflers as mandated by the state, and construction would occur throughout the project site and would not be concentrated or confined in the area directly adjacent to sensitive receptors.

Table 4.11-4
Project Construction Noise Levels

Construction Phase	Receptor Location			Worst Case Modeled Exterior Noise Level (dBA L_{eq}) [2]	Noise Threshold (dBA L_{eq}) [3]	Exceeded?
	Land Use	Direction	Distance (feet) [1]			
Demolition	Residential	East and South	150	76.3	80	No
	UCI Buildings	North	240	72.2	80	No
Site Preparation	Residential	East and South	150	76.8	80	No
	UCI Buildings	North	240	72.2	80	No
Grading	Residential	East and South	150	78.8	80	No
	UCI Buildings	North	240	74.7	80	No
Building Construction	Residential	East and South	150	79.0	80	No
	UCI Buildings	North	240	75.7	80	No
Paving	Residential	East and South	150	77.0	80	No
	UCI Buildings	North	240	72.9	80	No
Architectural Coating	Residential	East and South	150	67.2	80	No
	UCI Buildings	North	240	72.9	80	No

Notes:
1. Distance is from the nearest receptor to the main construction activity area on the project site. Not all equipment would operate at the closest distance to the receptor.
2. Modeled noise levels conservatively do not take credit for attenuation from perimeter walls along each of the existing sensitive receptors to the south and east.
3. Threshold from Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual,* Table 7-3, 2018.

Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to **Appendix A** for noise modeling results.

Table 4.11-2 shows that construction noise levels would not exceed the 80-dBA threshold. Additionally, compliance with the construction time frames from the City Noise Ordinance would minimize impacts from construction noise, as construction would be limited to daytime hours on weekdays and Saturdays. Therefore, construction activities due to the proposed project and LRDP amendment would result in a less than significant noise impact.

Operations

The project proposes to replace 100 existing multi-family, faculty/staff residences with 220 attached, for-sale units faculty/staff. Thus, due to no changes in use, the operational noise (stationary sources and traffic) associated with the proposed project would be similar to existing noise levels.

After completion of construction activities, typical noise associated with residential land uses include children playing, pet noise, amplified music, pool and spa equipment, and delivery drop offs. Noise from residential stationary sources would be consistent with the surrounding uses and would primarily occur during the "daytime" activity hours of 7 a.m. to 10 p.m.

Mechanical Noise. The nearest sensitive receptors to the project site are the University Hills residences to the south and east. Potential stationary noise sources related to long-term project operations would include mechanical equipment. Mechanical equipment (e.g., heating ventilation and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[3] Noise has a decay rate due to distance attenuation, which is calculated based on the Inverse Square Law of sound propagation. Based upon the Inverse Square Law, sound levels decrease by 6 dBA for each doubling of distance from the source.[4]

The HVAC units associated with the proposed residences would be located 70 feet or more from the closest sensitive receptors and would be separated by terrain and a perimeter wall (i.e., the closest sensitive receptors are at a higher elevation than the proposed project and have a wall along the property line). At this distance HVAC noise would be reduced to 49 dBA, which is below the City of Irvine's lowest daytime and nighttime standards of 55 dBA and 50 dBA, respectively. It should be noted that this noise level conservatively does not take credit for attenuation from terrain or intervening walls, which would further reduce noise levels. Additionally, the HVAC equipment would run sporadically throughout the day (when temperatures are warmer) and less frequent during nighttime hours (when temperatures are cooler). Furthermore, HVAC noise currently occurs on-site and project generated noise would be similar to existing conditions. Therefore, impacts from mechanical equipment would be less than significant.

Parking Noise. Traffic associated with parking areas is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the L_{eq} or CNEL scales. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-bys range from 53 to 61 dBA[5] and may be an annoyance to adjacent noise-sensitive receptors. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 50 feet for normal

[3] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, Noise Navigator Sound Level Database with Over 1700 Measurement Values, June 26, 2015.
[4] Cyril M. Harris, Noise Control in Buildings, 1994.
[5] Kariel, H. G., Noise in Rural Recreational Environments, Canadian Acoustics 19(5), 3-10, 1991.

speech to 50 dBA at 50 feet for very loud speech.[6]

Parking currently occurs on-site and also occurs at the adjacent properties under existing conditions. Nominal parking noise would occur on-site within visitor parking stalls and would be similar to existing conditions. Each of the proposed residences would include a garage, which would attenuate parking noise. Additionally, parking lot noise is instantaneous and would be well below the City of Irvine noise standards when averaged over time. Therefore, noise impacts from parking lots would be less than significant.

Off-Site Traffic Noise. In general, a 3-dBA increase in traffic noise is barely perceptible to people, while a 5-dBA increase is readily noticeable. Traffic volumes on project area roadways would have to approximately double for the resulting traffic noise levels to generate a 3-dBA increase.[7] Project implementation would replace 100 existing multi-family, faculty/staff residences with 220 attached, for-sale faculty/staff units. As such, the proposed project is not anticipated to significantly change roadway traffic volumes. Therefore, because the proposed project would not generate sufficient traffic to result in a permanent 3-dBA increase in ambient noise levels, noise impacts associated with traffic would be less than significant.

On-Site Traffic Noise. On-site traffic noise levels from East Peltason Drive and Los Trancos Drive were modeled using the SoundPLAN software. SoundPLAN allows computer simulations of noise situations, and creates noise contour maps using reference noise levels, topography, point and area noise sources, mobile noise sources, groundcover type, and intervening structures. Mobile noise sources were modeled in SoundPLAN for East Peltason Drive and Los Trancos Drive using traffic data from the LRDP EIR (adjusted for future growth) and the Institute of Transportation Engineers (ITE) *ITE Trip Generation Manual*. Traffic along East Peltason Drive was modeled with an average daily traffic (ADT) volume of 19,000 and a speed of 35 miles per hour (mph), and Los Trancos Drive was modeled with 5,000 ADT and a speed of 25 mph. A total of 33 residential receivers were modeled on-site and represent the closest locations for resident exposure to traffic noise along East Peltason Drive and Los Trancos Drive. The modeled receiver results are provided in Table 4.11-5.

According to the SoundPLAN results, the loudest on-site traffic noise levels would range between 44.6 dBA CNEL and 59.2 dBA CNEL, which would not exceed 60 dBA CNEL. It is noted that the proposed residences would be constructed in compliance with the 2019 California Building Code standards. According to the U.S. Environmental Protection Agency's (EPA's) *Protective Noise Levels* document (1978) the exterior-to-interior reduction for standard construction is generally 25 dBA. Therefore, interior noise levels would range between 19.6 dBA CNEL and 34.2 dBA CNEL and would be well below the City's and State's interior noise standard. On-site traffic noise levels would comply with State and local noise standards and impacts due to the proposed project and

[6] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, Noise Navigator Sound Level Database with Over 1700 Measurement Values, June 26, 2015.

[7] According to the California Department of Transportation, *Technical Noise Supplement to Traffic Noise Analysis Protocol* (September 2013), it takes a doubling of traffic to create a noticeable (i.e., 3 dBA) noise increase.

LRDP amendment that accommodates the project would be less than significant.

Table 4.11-5
SoundPLAN Receiver Results

Receiver	Modeled Traffic Noise Level (dBA CNEL)[1]
1	51.4
2	57.1
3	57.5
4	57.7
5	57.7
6	59.2
7	56.5
8	55.8
9	58.2
10	55.9
11	58.4
12	54.3
13	58.8
14	51.7
15	59.1
16	51.7
17	52.0
18	45.8
19	50.5
20	44.6
21	51.1
22	45.1
23	52.4
24	52.3
25	51.8
26	51.6
27	51.5
28	48.3
29	53.5
30	53.8
31	54.6
32	54.5
33	51.8

1. Calculated using the SoundPLAN Essential software. Refer to **Appendix A** for modeled receiver locations.

b) Groundborne Vibration: Less than Significant Impact

Increases in groundborne vibration levels attributable to the proposed project and LRDP amendment would be primarily associated with short-term construction-related activities. The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations in their 2018 Transit Noise and Vibration Impact Assessment Manual. The types of construction vibration impacts include human annoyance and building damage.

The FTA has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.5 in/sec is considered safe and would not result in any construction vibration damage. This evaluation uses the FTA architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 inch-per-second peak particle velocity (PPV) and human annoyance criterion of 0.4 inch-per-second PPV in accordance with California Department of Transportation (Caltrans) guidance.[8]

Table 4.11-6 lists vibration levels at 25 feet and 50 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in Table 4.11-6, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during construction range from 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity, which is below the FTA's 0.2 PPV threshold.

The nearest off-site structure are the residences that are located more than 50 feet from the project construction area. As shown in Table 4.11-6, at 50 feet, construction equipment vibration velocities would not exceed 0.089 in/sec PPV, which is below the FTA's 0.2 PPV threshold and Caltrans' 0.4 in/sec PPV threshold for human annoyance. It is also acknowledged that construction activities would occur throughout the project site and would not be concentrated at the point closest to the nearest off-site structure. Additionally, once operational, the project would not be a source of groundborne vibration. Therefore, vibration impacts associated with the

[8] California Department of Transportation, Transportation and Construction Vibration Guidance Manual, Table 20, September 2013.

proposed project and the LRDP amendment that accommodates the project would be less than significant. No mitigation is required.

Table 4.11-6
Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 50 Feet (in/sec)1
Large Bulldozer	0.089	0.032
Caisson Drilling	0.089	0.032
Loaded Trucks	0.076	0.027
Jackhammer	0.035	0.012
Small Bulldozer/Tractors	0.003	0.001
1. Calculated using the following formula: PPVequip = PPVref x (25/D)1.5, where: PPVequip = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPVref = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018; D = the distance from the equipment to the receiver.		
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, 2018.		

c) Private Airstrips and Public Airport Noise: No Impact

The nearest airport is the John Wayne Airport located approximately 2.4-miles to the northwest of the project site. According to the John Wayne Airport 2018 Annual 60-75 (5 dB intervals) CNEL Noise Contours, the project site is located outside the 60 dBA CNEL noise contour for John Wayne Airport. Therefore, neither the proposed project nor the LRDP amendment that accommodates the project would expose people residing or working in the project area to excessive airport- or airstrip-related noise levels, and no impact would occur. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.12 Population and Housing

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

Discussion

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

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

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

The proposed project would demolish 100 existing faculty/staff apartment units to construct up to 220 for-sale, attached faculty/staff housing units. In addition, the LRDP amendment would increase the faculty/staff housing capacity from 1,700 units to 1,830 units on the campus, which would accommodate the construction of the 220 units associated with the proposed project.

Of the 100 units within Las Lomas, 12 units were for short-term lease only, available to visiting scholars/guest faculty that do not permanently reside within the local community. The remaining 86 units within the Las Lomas Apartments complex were for long-term residents, who were offered guaranteed housing in the recently completed University Hills' Miramonte Rental Townhomes, less than one mile southeast of the project site, or if they chose, could move into

another University Hills property pending availability or be placed on the waiting list. The take rate of housing within University Hills was 68 leasers out of 88 leasers from Las Lomas (77 percent) that chose to remain within University Hills. Only 20 leasers out of 88 leasers (23 percent) from Las Lomas leases chose to find alternative housing off-campus. Therefore, the proposed project would not displace a substantial number of people or housing that would require the construction of replacement housing elsewhere and impacts would be less than significant. No mitigation is required.

The purpose of the proposed project is to retain existing and recruit faculty to the University. With relocation of the existing Las Lomas residents, the proposed project would induce population growth on the campus. With the construction of 220 faculty/housing units, a conservative estimate of approximately 248 new faculty or staff[1] would be housed within the proposed project. Additionally, historic Irvine Campus Housing Authority demographic numbers have occupation of University Hills units at 3.0 persons per household; therefore, the overall population increase would be an additional 660 persons (approximately 248 faculty/staff and 412 non-UCI affiliated household members). No additional staff would be hired to support project operations, and the proposed project would not directly increase student enrollment.

As of the Fall 2019 quarter and prior to the COVID-19 pandemic, there were approximately 8,813 faculty and staff[2] on the UCI campus. The conservative estimate of approximately 248 new faculty and staff would result in a faculty and staff population of approximately 9,061, which is within the 11,443 faculty and staff capacity analyzed in the 2007 LRDP EIR. Additionally, campus populations at buildout were analyzed in the LRDP EIR, which found that implementation of the 2007 LRDP would not result in significant impacts due to population growth as it is considered a small portion of planned growth for the region (LRDP EIR, page 4.10-10).

For the conservative estimate of approximately 412 non-UCI affiliated household members, population growth does not constitute an environmental impact; rather, increased demands on the environment resulting from increases in population are considered environmental impacts. Physical environmental effects associated with development of the proposed project are evaluated throughout Sections 4.1 through 4.18 of this IS/MND. As discussed in Section 4.13, Public Services, of this IS/MND, construction of new or expanded public services facilities would not be required to serve the project. Per Section 4.17, Utilities and Service Systems, the project would not include construction of substantial new off-site utility infrastructure or expansion of existing utilities. While the project would result in population growth, such growth could be accommodated by existing public services and infrastructure and would not result in significant adverse environmental effects. Therefore, impacts due to the proposed project and LRDP amendment that accommodate the project in regards to population growth would be less than

[1] Information provided by Irvine Campus Housing Authority. Conservatively assumes all faculty or staff housed within the proposed project would be newly hired, and assumes multiple faculty or staff could live within one household.

[2] https://www.oir.uci.edu/files/empl/VIA01NF-all-employees.pdf. Accessed September 11, 2021.

significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.13 Public Services

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

Discussion

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

a) Fire Protection: Less than Significant

Fire protection and emergency response services to the campus are provided by the Orange County Fire Authority (OCFA). The primary responder serving the Main Campus, OCFA Fire Station #4, is located north of the campus on the corner of California and Harvard Avenues. As of 2016, the response time for Fire Station #4 was six minutes and 56 seconds, and UCI generated 923 calls, or approximately 38%, of the station's calls, which is within the standard adopted by OCFA.[1] According to an analysis conducted by OCFA in November 2006, this station had adequate capacity to accommodate existing demand on the Main Campus. Built in 1966, Fire Station #4 has no current plans for its expansion (LRDP EIR, page 4.11-6).

Overall, the increase in calls would be minimal in comparison to the overall population and existing structures already served by OCFA fire stations in vicinity of the proposed project;

[1] https://www.ocfa.org/Uploads/Orange%20County%20Fire%20Authority%20SOC_FINAL.pdf. Accessed September 8, 2021.

therefore, the increase for fire protection and medical emergency response are not anticipated to be substantial. However, while the anticipated population increase associated with implementation of the proposed project and the LRDP amendment to accommodate the project is not anticipated to result in a substantial adverse effect on OCFA's ability to serve residents, the proposed project would result in an increased demand for services and potentially result in a decline of service standards, specifically, response times.

To help reduce demands on OCFA services, during design of the proposed project, the UCI Fire Marshal would be consulted regarding the project design and compliance with California Code regulations. Consistent with the campus' standard procedures, the UCI Fire Marshal reviews and approves all individual development plans prior to construction to ensure that adequate fire flows would be maintained, an adequate number of fire hydrants would be provided in the appropriate locations, and circulation and design features would allow adequate emergency vehicle access. Furthermore, the proposed project would be designed and constructed in compliance with applicable requirements of the California Building Code and California Health and Safety Code, including requirements pertaining to fire protection systems. As further described in Section 4.17, Utilities and Infrastructure, of this IS/MND water connections would be extended from the existing water lines serving the project sites, and adequate fire flow would be provided. Fire hydrants are or would be provided in accordance with the California Code of Regulations.

Therefore, while the Project would not trigger the need for new fire protection facilities or equipment that would result in physical environmental impacts, OCFA has informed UCI regarding OCFA interest in constructing a new fire station within Battalion 5 to serve the Irvine Business Complex (IBC) district, which is adjacent to the UCI North Campus. This would provide an additional fire station in the immediate vicinity of the North Campus, improving fire services to the project site and surrounding areas in the city of Irvine. This is consistent with the 2007 LRDP EIR, which discussed OCFA plans for a new 9,000 square foot station. As discussed in the 2007 LRDP EIR, the physical adverse impacts associated with the construction of the fire station would include short-term construction-related impacts and would be subject to CEQA review and compliance with local, state and federal environmental requirements and would include appropriate mitigation to reduce potential impacts to the physical environment. The 2007 LRDP EIR found that with this review adverse physical impacts resulting from construction and operation of a new fire station to serve cumulative regional demand would be less than significant. While the planning for a new fire station remains speculative as no development plans have been submitted by OCFA, UCI will continue to cooperate with OCFA in any future feasibility analysis for a new fire station located on, or in the vicinity of, the North Campus. Therefore, implementation of the proposed project and LRDP amendment to accommodate the project would have a less than significant impact regarding the construction of new or physically altered fire protection facilities. No mitigation is required.

b) Police Protection: Less than Significant

The UCI Police Department (UCIPD) is located in the Public Services building on the East

Campus approximately 1.5 miles north of the project site. The UCIPD provides all police services (all patrol, investigation, crime prevention education, and related law enforcement duties) for the campus (LRDP EIR, page 4.11-3).

The proposed project and the LRDP amendment to accommodate the project would result in new structures with associated residents that would increase the campus population. The proposed project would result in new residences within the UCIPD service area and could result in an increase in call volume for law enforcement services to the project site. Based on the current ratio of officers to residents for UCIPD (1 officer per 1,000 residents) and the conservative estimate of an increased population of 660 people at University Hills (247 of which would be faculty or staff), implementation of the proposed project and LRDP amendment would result in the demand for less than one additional police officer. Furthermore, there are no current plans to construct or expand police facilities on campus. Therefore, it is not anticipated that the proposed project and LRDP amendment would increase demand that new law enforcement facilities would be required to be constructed or physically altered. No mitigation is required.

c) Schools: Less than Significant

The Irvine Unified School District (IUSD) provides kindergarten through grade 12 (K-12) public education services for school age children residing on the UCI campus. The demand for grade K-12 public education facilities generated by the UCI on-campus population is associated primarily with married student, faculty, and staff households. Through IUSD's open enrollment program, UCI-based students may attend various school campuses in the district. Implementation of the proposed project and LRDP amendment that would accommodate the project could result in an increase in the number of school age children on campus. It is likely that a portion of the proposed homes would be occupied by families with school age children, a majority of who would enroll in IUSD K-12 schools, creating additional demand for school facility capacity. The LRDP EIR however concluded that these new students represent a small percentage of IUSD enrollment, which may not even be perceivable within IUSD's yearly student enrollment fluctuations, even with the estimated additional 61 persons above what was analyzed in the 2007 LRDP EIR (see Section 4.11, Population and Housing). However, to offset its potential impact on school district facilities, the Irvine Campus Housing Authority (ICHA) would pay development impact fees to IUSD to support local school construction and operation. Therefore, impacts to schools would be less than significant. No mitigation is required.

d) Parks: Less than Significant Impact

The proposed project and the LRDP amendment to accommodate the project would result in new structures with associated residents that would increase the campus population, which could require additional need for recreational and park space. However, all University Hills residents have access to community amenities, such as the Los Trancos Recreation Area, located to the south of the project site, which includes a pool, playgrounds, picnic area, and athletic courts. Additional recreational resources, including park space, exists throughout University

Hills, such as Vista Bonita Parking, Gabrielino Recreation Area, Urey Recreation Area, Knoll Garden, Meadow Park, and many others, within the immediate vicinity of the project site.[2] In addition, on-campus amenities, such as the Anteater Recreation Center (ARC), Aldrich Park, and Crawford Athletics Complex, would also be available to University Hills residents. The 2007 LRDP EIR assumed that the current level of maintenance of campus recreational facilities would continue and that substantial facility deterioration would not occur (page 4.12-5). Therefore, impacts to existing recreational facilities due to the proposed project and the LRDP amendment that would accompany the project would be less than significant. No mitigation is required.

e) Other Public Facilities: Less than Significant

As discussed above and in Section 4.11, Population and Housing, the proposed project and LRDP amendment that would accompany the project would not substantially increase campus population beyond what was planned for in the 2007 LRDP and analyzed in its EIR. Furthermore, public facilities, such as libraries, exist on-campus, including Langson Library and the Science Library, and would not result in the need for the construction of new facilities at UCI.

Additionally, due to the small increase of approximately 412 persons of non-UCI affiliated household members (out of a total of 660 persons) to be associated with the project, which is a conservative estimate, the existing library space, collections, and programs provided by the Orange County Public Library System would be adequate for additional residents generated by the proposed project. In addition, the Orange County Public Library system would continue to receive funding for library facilities and resources through the County's General Fund and library activities, such as fines, facility rentals, passport photo/execution fees, grants, and private donations. Therefore, impacts due to the proposed project and LRDP amendment to other public facilities would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

[2] https://icha.uci.edu/amenities-map/. Accessed September 8, 2021.

4.14 Recreation

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

Discussion

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

a) Physically Deteriorate Existing Facilities: Less than Significant Impact

As discussed in Section 4.11, Population and Housing, the proposed project and the LRDP amendment that would accommodate the project would not substantially increase faculty and staff populations. However, approximately 660 new household members would be associated with the proposed project, which could require additional need for recreational space. However, all University Hills residents have access to community amenities, such as the Los Trancos Recreation Area, located to the south of the project site, which includes a pool, playgrounds, picnic area, and athletic courts. Additional recreational resources, including park space, exists throughout University Hills, such as Vista Bonita Parking, Gabrielino Recreation Area, Urey Recreation Area, Knoll Garden, Meadow Park, and many others, within the immediate vicinity of

the project site.[1] In addition, on-campus amenities, such as the Anteater Recreation Center (ARC), Aldrich Park, and Crawford Athletics Complex, would also be available to University Hills residents. The 2007 LRDP EIR assumed that the current level of maintenance of campus recreational facilities would continue and that substantial facility deterioration would not occur (page 4.12-5). Therefore, impacts to existing recreational facilities due to the proposed project and the LRDP amendment that would accompany the project would be less than significant. No mitigation is required.

b) Construction of Recreational Facilities: No Impact

As discussed in 4.14(a) above, recreational buildings are not proposed as part of the project or the LRDP amendment. Instead, the proposed project would use the existing Los Trancos Recreation Area located southerly adjacent to the project site in addition to other available amenities that exist within University Hills and on the campus. As discussed in Section 4.0, Project Description, a Class I pedestrian/bicycle path would be constructed to provide additional access from the project site to the campus' bicycle/pedestrian network via a bridge to be constructed over East Peltason Drive; however, as discussed in Sections 4.1 through 4.18, all potential impacts would be less than significant, no impact, or would be mitigated to a less than significant level. No additional impacts due to the construction of these recreational facilities would occur. Therefore, no impacts due to construction or expansion of recreational facilities as a result of the proposed project or LRDP amendment would occur. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

[1] https://icha.uci.edu/amenities-map/. Accessed September 8, 2021.

4.15 Transportation

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?					**X**
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?				**X**	
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				**X**	
d) Result in inadequate emergency access?				**X**	

Discussion

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

a) Conflict with a Circulation Plan: No Impact

As discussed in Section 2.0, Project Description, operational vehicle access to the project site would occur via the existing Los Trancos Drive, which bisects the project site, and intersects and terminates at East Peltason Drive immediately to the north. Los Trancos Drive transitions into

California Avenue approximately 0.5 mile to the south. Internal drive aisles would be constructed to access both the east and west sides from Los Trancos Drive. The proposed project is located internally on the campus, would utilize existing on-campus roadways for access, and would not require modification of surrounding roadway circulation systems. Therefore, the proposed project and LRDP amendment that accommodates the project would not conflict with a roadway circulation system and no impact would occur.

UCI administers an extensive program of Transportation Demand Management (TDM) measures that encourage commuters to use alternate modes of transportation, including walking, bicycling, carpooling, vanpooling, and riding the UCI shuttle, other local shuttle systems, train, or bus. With these TDMs, UCI has achieved the highest average vehicle ridership for an employer great than 3,000 within the South Coast Air Quality Management District (SCAQMD) area, which includes Orange, Los Angeles, and Riverside Counties. The proposed project would not require the removal of any transit routes or bicycle paths, and would not hinder implementation of TDM measures on the campus as discussed further below in Section 4.15(b). Therefore, the proposed project and LRDP amendment that accommodates the project would not conflict with alternative transportation plans, policies and programs and no impact would occur. No mitigation is required.

b) Conflict with CEQA Guidelines Section 15064.3, Analyzing Vehicle Miles Traveled: Less than Significant Impact

Under the California Environmental Quality Act (CEQA), administrative regulations and guidelines are set forth that explain how to determine whether an activity (i.e., proposed project) is subject to environmental review, the steps to undertake the review, and the required content of the review. Since the original CEQA, subsequent legislations have updated the CEQA guidelines to better achieve the State's efforts to improve air quality and reduce greenhouse gas emissions (GHG) through transportation planning. Updated CEQA guidelines have gone into effect statewide that include sections created by Senate Bill 743 (SB 743). The University of California has adopted the new CEQA guidelines making vehicle miles traveled (VMT) the primary metric for evaluating transportation impacts.

Significance Thresholds

SB 743 requires the Governor's Office of Planning and Research (OPR) to establish recommendations for identifying and mitigating transportation impacts within CEQA. Generally, SB 743 moves away from using delay-based level of service as the primary metric for identifying a project's significant impact to instead use VMT. The final Technical Advisory released by OPR in December 2018 provides guidance on evaluating transportation impacts and VMT and is the guidance on which this VMT analysis is based on.

Prior to undertaking a full VMT analysis, OPR's Technical Advisory advises that lead agencies conduct a screening process "to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study." The screening criteria that is used in this analysis is described later in this chapter.

When conducting a VMT analysis, OPR's Technical Advisory recommends significance thresholds that may constitute a significant transportation impact. These recommended significance thresholds are summarized in Table 4.15-1.

Table 4.15-1
SB 743 Recommended Significance Thresholds

Type	Metric	Threshold
Residential Development	Household VMT per capita	15% less than existing city household VMT per capita or regional household VMT per capita
Office Development	VMT per Employee	15% less than existing regional VMT per employee
Retail Development	Total VMT	If project causes a net increase in total VMT

If a significant impact is identified utilizing the aforementioned significance thresholds, mitigation must be identified.

Under OPR's Technical Advisory recommendations, lead agencies have the discretion to set or apply their own thresholds of significance or rely on thresholds recommended by other agencies. The University of California has adopted the new CEQA guidelines making VMT as the metric for evaluating transportation impacts. However, each campus has the discretion to utilize their own thresholds of significance based on their location.

Since UCI is located within the City of Irvine, in some cases significance thresholds set by the City are appropriate for UCI. The City of Irvine has adopted VMT Impact Analysis Guidelines that are generally consistent with OPR's Technical Advisory recommendations. The City has updated the Irvine Traffic Analysis Model TransCAD Version (ITAM TC) for use in VMT analyses of this type and it includes a VMT tool for use when evaluating development projects.

Per the City of Irvine Guidelines, the impact analysis methodology is consistent with Section 15064.3 of the CEQA Guidelines. ITAM TC is used to calculate VMT statistics for both No Project and With Project conditions. For this analysis, two model scenarios are evaluated — a No Project run and a With Project run. The net difference in VMT between the With Project run and the No Project run represents the VMT attributable to the project. This takes into account both direct and indirect effects of the project as trips are redistributed throughout the highway network based on the effect of the project. The net difference in VMT and the net difference in population or employees due to the project are used to calculate a "project change VMT rate" on a per capita basis (VMT per population and VMT per employee). A project that results in a net change VMT rate that is below the applicable significance threshold does not result in a significant impact. A project that results in a project net change VMT rate that is above the applicable significance threshold is deemed significant and requires mitigation.

The City of Irvine methodology utilizes VMT statistics at a countywide level based on an existing condition baseline in order to account for both the direct and indirect effects of the project, as noted above, since trips are redistributed throughout the highway network due to the effect of

the project. Table 4.15-2 summarizes the City of Irvine's significance thresholds.

Table 4.15-2
City of Irvine Significance Thresholds

Development Type	Metric	Significance Threshold Description	Existing Ave. VMT per capita	Significance Threshold (15 percent reduction from average)
Residential project	VMT per population	15% less than existing countywide average residential VMT per capita	17.5 VMT per population	14.9 VMT per population
Non-residential project	VMT per employee	15% less than existing countywide average VMT per employee	48.8 VMT per employee	41.5 VMT per employee
Mixed-use projects	Each use evaluated separately per above			
Source: CEQA Manual Volume III. Technical Appendices, City of Irvine, April 2020				

OPR's Technical Advisory specifically recommends using VMT per capita (per population) as the metric for evaluating residential developments and advises local agencies to establish an appropriate method of analysis for projects that fit the residential category. The City of Irvine Guidelines utilizes VMT per capita (per population) as the metric for all residential projects. The residential significance threshold is based on the countywide residential VMT trips divided by the countywide population. Since OPR's Technical Advisory defers selection of an appropriate criteria to the local agency, the City of Irvine methodology and significance thresholds, which are appropriate for a project consisting of residential use, is utilized in this analysis.

Since the project consists entirely of residential uses, the project is classified as a residential project and the VMT per capita (per population) metric is applicable. As shown in Table 4.15-2, the existing countywide average for residential use is 17.5 VMT per capita (per population) and the significance threshold established by the City of Irvine is 14.9 VMT per capita (per population), which is 15 percent lower than the existing average.

The nearby City of Newport Beach has also adopted VMT guidelines, which are also generally consistent with OPR's Technical Advisory recommendations. However, for analysis of the project, ITAM TC represents a suitable methodology since the project is located within the ITAM TC primary modeling area.

In addition to the quantitative analysis, a qualitative analysis of the project's potential transportation impacts has also been conducted. The quantitative analysis was prepared as described above, and a qualitative significance criteria has been established to evaluate the project's compatibility with the statutory goals for the VMT metric. The following are the VMT metric's three statutory goals as stated in OPR's Technical Advisory:

- The reduction of GHG.

- The development of multimodal transportation networks.
- A diversity of land uses.

The significance criteria utilized here for qualitative analysis is summarized in Table 4.15-3. Differences between OPR's Technical Advisory and City of Irvine's Guidelines are also noted in Table 4.15-3.

If a significant impact is identified, feasible mitigation measures are identified based on substantial evidence, such as that from the California Air Pollution Control Officers Association's (CAPCOA) Comprehensive Report for Quantifying Greenhouse Gas Mitigation Measures. The CAPCOA document provides 54 travel demand management (TDM) strategies associated with the reductions of VMT and GHG emissions and is an appropriate resource for this type of analysis.

Table 4.15-3
VMT Significance Criteria

Category	Criteria/Screening	Threshold
1. Screening Thresholds	OPR's Technical Advisory and the City of Irvine's VMT Guidelines provides screening thresholds for land use projects. These screening thresholds include:	
	Trip generation screening – Small projects can be screened out from completing a full VMT analysis.	1. Per OPR Technical Advisory, if the project generates less than 110 trips per day, the project is assumed to have a less than significant impact. The City of Irvine utilizes a threshold of 250 trips per day.
	Map-based screening – Projects that are located in areas with low VMT can be screened out from completing a full VMT analysis.	2. Per OPR Technical Advisory, if the project is in a low VMT area, the project is assumed to have a less than significant impact. The City of Irvine does not use the map-based screening criteria.
	Proximity to transit – Projects within ½ mile of a major transit stop or a stop located along a high-quality transit corridor reduce vehicle miles traveled and therefore can be screened out from completing a full VMT analysis. The project must also meet additional criteria regarding Floor Area Ratio, parking, affordable housing units, and consistency with the applicable Sustainable Communities Strategy.	3. Per OPR Technical Advisory, If the project is within ½ mile of a high-quality transit stop/corridor, and meet the other four requirements, the project is assumed to have less than significant impact. The City of Irvine has identified two Transit Priority Areas (TPA) in the City.
	Locally-serving retail – Retail that is 50,000 square feet or smaller are generally considered locally serving and can be screened out from completing a full VMT analysis.	4. Per OPR Technical Advisory, if the retail component of the project is less than 50,000 then the retail component is assumed to have a less than significant impact. The City of Irvine considers retail of 100,000 or smaller as locally serving.

	Affordable residential development – 100% affordable housing in infill locations can be screened out from completing a full VMT analysis. Evaluate the project using the screening thresholds.	5. Per OPR Technical Advisory and the City of Irvine, if the project consists of 100% affordable units and is located in an infill location, then the project is assumed to have less than significant impact.
2. VMT Analysis	Evaluate the project's VMT per capita and compare to threshold of significance. Since the City of Irvine's Guidelines specify uses such as the proposed residential project, the City of Irvine's impact analysis methodology and significance thresholds are used in this analysis.	Refer to Table 2-2 for City of Irvine significance thresholds.

Transportation Impact Analysis

Screening Evaluation

Prior to undertaking a detailed VMT study, OPR's Technical Advisory advises that lead agencies conduct a screening process "to quickly identify when a project should be expected to cause a less than significant impact without conducting a detailed study." OPR suggests that lead agencies may presume a project has a less than significant impact on VMT using project size, maps, transit availability and provision of affordable housing. The City of Irvine Guidelines utilizes a similar screening criteria. As discussed in Chapter **Error! Reference source not found.**, above, for this analysis the project has been evaluated considering both OPR's Technical Advisory and the City of Irvine's screening process.

Trip Generation Screening

OPR's Technical Advisory recommends that small projects that generate less than 110 trips per day generally may be assumed to cause a less-than significant transportation impact. The City of Irvine Guidelines utilizes a threshold of 250 trips per day. Trips generated by the proposed project were estimated using trip rates from the UCI Main Campus Traffic Model (MCTM). Trip rate and trip generation calculation sheets are included in Appendix E. Table 4.15-4 summarizes the trip rates and corresponding estimated trip generation for the proposed project.

As shown in Table 4.15-4 the project (220 multi-family units) would generate approximately 1,980 daily trips, 115 trips during the AM peak hour and 147 trips during the PM peak hour. When accounting for the existing trips from the Las Lomas apartment complex (100 multi-family units) that will be removed, the project would result in a net trip increase of 1,197 daily trips, 69 trips in the AM peak hour and 89 trips during the PM peak hour.

Since the proposed project is estimated to generate more than 110 trips per day (as well as more than the City's threshold of 250 trips per day), the project does not qualify as a small project that can be presumed to be less than significant.

Table 4.15-4
Trip Generation Summary

			AM Peak Hour			PM Peak Hour			
Land Use	**Amount**	**Units**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**ADT**
Trip Rates									
Faculty/Staff Housing (2-bedroom)	DU		0.038	0.398	0.436	0.345	0.210	0.555	7.5
Faculty/Staff Housing (3-bedroom)	DU		0.045	0.477	0.522	0.414	0.252	0.666	9.0
Trip Generation									
Existing									
Las Lomas Apartment Complex (2-bedroom)	78	DU	3	31	34	27	16	43	585
Las Lomas Apartment Complex (3 -bedroom)	22	DU	1	10	11	10	5	15	198
Total - Existing	***100***	***DU***	***4***	***42***	***46***	***37***	***21***	***58***	***783***
Proposed									
Faculty/Staff Housing (3-bedroom)	220	DU	10	105	115	91	55	146	1,980
Net Increase in Trips			**6**	**63**	**69**	**54**	**34**	**88**	**1,197**

Trip Rate Source: UCI Main Campus Traffic Model (MCTM)
ADT = average daily trips
DU = dwelling unit

Map-Based Screening

OPR's Technical Advisory recommends that residential and office projects located in areas with low VMT per capita, and that incorporate similar features, will exhibit similarly low VMT per capita, therefore there will be no significant impacts to VMT.

The City of Irvine does not use a map-based resource for identifying areas in the City with low VMT per capita. Therefore, this screening threshold has not been used for the proposed project.

Proximity to High Quality Transit

OPR's Technical Advisory suggests that a project can be presumed to have a less than significant impact on VMT if the project is within a half-mile of an "existing major transit stop or an existing stop along a high-quality transit corridor." A major transit stop is defined as "the intersection of two or more major bus routes with a frequency service interval of 15 minutes or less during the morning and afternoon peak commute periods." A high-quality transit corridor is defined as an existing corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. Based on this definition, the proposed project would be eligible to be "screened out" under this threshold.

Anteater Express is UCI's transit system that provides transportation to various areas on and off the UCI Campus. Anteater Express is an attractive mode of transportation because of the short distance between stops and reasonable fares. UCI also provides enhanced services that increases the ease of using the shuttle service such as the on-line Live Bus Tracking system that give real time data of the buses in service. An application is also available for download that allow users

to view the shuttle's location. UCI also offers a Medical Center shuttle that is available to students, faculty, and staff.

Two Anteater Express stops are located on East Peltason Drive less than a quarter mile from the proposed project, providing access to the Anteater Express M Line. These stops are located at South Circle View Drive and the Engineering Service Road approximately 1,200 feet and 1,100 feet from the project site, respectively. Headways for the M Line are 6 to 10 minutes during the day and 25 minutes after 7:00 PM. Therefore, the Anteater Express M line would be considered a high-quality transit corridor since service intervals are no longer than 15 minutes during peak on-campus commute hours and two M line bus stops are located less than a quarter mile from the project site.

In addition, OCTA operates bus transit services to the UCI campus area, though stops nearest the project site are located approximately 0.8 miles away. The OCTA stop located at the intersection of East Peltason Drive and Campus Drive can be accessed via the Anteater Express M Line, providing transit access to the wider network.

Since the project is located along a high-quality transit corridor, the project is presumed to have a less than significant impact on transportation.

The City of Irvine utilizes a similar screening criteria for projects located near high-quality transit. The City has identified two existing Transit Priority Areas (TPA). The first TPA is a half mile radius around the Tustin Metrolink Station, and the second TPA is a half mile radius around the Irvine Metrolink Station. Therefore, the project would not be eligible to be screened out under the City's criteria.

Affordable Housing

OPR's Technical Advisory and the City of Irvine's Guidelines state that affordable housing projects located in infill locations can be assumed to have a less than significant impact. The proposed project does not apply to this screening threshold.

VMT Analysis

As shown above, the project has a less than significant impact on transportation based on the transit proximity screening criteria. However, the project site is not in an area recognized by the City of Irvine as a Transit Priority Area that satisfies the City's transit screening criteria. Therefore, a detailed VMT analysis has been prepared to show the project's effect on regional VMT. For this analysis, the City of Irvine's Guidelines are used, which are generally consistent with the OPR recommended methodology as discussed above. The City of Irvine's Guidelines specify significance thresholds for two categories, residential and non-residential projects. The City of Irvine's impact analysis methodology and significance thresholds for a residential project are utilized (see previously referenced Table 4.15-3 for City of Irvine significance thresholds).

Two aspects of the project are analyzed. First, the proposed development of 220 multi-family residential units for UCI faculty and staff are evaluated, and second, the proposed LRDP

amendment to increase the total amount of Faculty and Staff Housing dwelling units from 1,700 units to 1,830 units (an increase of 130 units).

Faculty/Staff Housing Project Analysis

As previously mentioned, the City of Irvine's impact analysis methodology involves using ITAM TC to estimate the net change in VMT when the project is added to existing baseline conditions. The net change in VMT and net change in population or employment is used to calculate what is referred to as the "project change VMT rate" measured on a per capita basis (VMT per population or VMT per employee). The project change VMT rate is then compared to the applicable significance threshold. A project that results in an increase above the significance threshold may be deemed significant and mitigation is required.

The project is located within two ITAM TC TAZ zones—TAZ 625 and TAZ 629. The project's land uses were added to the TAZ zones existing conditions (2018 baseline) and a full ITAM TC run was conducted and the ITAM TC VMT tool was used to estimate VMT for conditions with the project. Per City of Irvine Guidelines, the net change in total countywide residential VMT and the net change in total population are used to estimate the project change VMT rate per capita based on the existing condition as a baseline. As discussed above, this methodology of using the net change in countywide totals, as opposed to the project's location by TAZ, captures both the direct and indirect effects of the project as trips are redistributed throughout the highway network due to the effect of the project. Table 4.15-5 summarizes the ITAM TC VMT estimates for conditions with and without the project.

Table 4.15-5
ITAM TC VMT Estimates for 220 Unit Faculty/Staff Project

Area	Category	Baseline (No Project)	Baseline (With Project)	Net Change
Residential VMT				
Orange County	Residential VMT	56,338,915	56,345,727	6,812
	Population	3,218,615	3,219,213	598
Project Change VMT Rate (Residential VMT per Population)				11.39
Employment VMT				
Orange County	Employment VMT (Non-Residential)	83,065,931	83,063,454	-2,477
Project = 220 multi-family units for faculty and staff (See **Error! Reference source not found.** for the ITAM TC Project VMT Summary Report Worksheet).				

As shown in Table 4.15-5, ITAM TC estimates that the net change of non-residential VMT is 6,812 under conditions with the project. ITAM TC also estimates that the project would result in a net increase in population of 598 with the project. Therefore, the net change in population VMT and total population results in a project change VMT rate of 11.39 VMT per capita (per population).

ITAM TC estimates also show that employment VMT is reduced with the addition of the project. Employment VMT reduces overall due to the project since the location of the project facilitates

commute trips by walking and biking for project residents who are UCI employees. Without the project, these employees would have to live further from campus, and would be more likely to commute by automobile, thereby increasing VMT. Table 4.15-6 provides a comparison between the project VMT per capita (per population) and the significance threshold.

Table 4.15-6
VMT Impact Summary for 220 Unit Faculty/Staff Project

Description	VMT per Capita
Project VMT Rate (per Capita)	11.4
Countywide Average (Baseline)	17.5
Threshold of Significance (Baseline minus 15%)	14.9
Difference from Threshold of Significance	-3.5
Is Project above or below Regional Threshold?	Below
Significant Impact?	No

As shown, the project results in a VMT per capita (per population) of 11.4. The threshold of significance is 14.9 VMT per capita (per population). The project VMT is lower than the regional average and the threshold of significance. Therefore, the project would not result in a significant impact (see Appendix E for the ITAM TC Project VMT Summary Report Worksheet).

LRDP Amendment Analysis

The LRDP development program for Faculty and Staff Housing would be amended to increase the capacity from 1,700 units to a capacity of 1,830 units, an overall increase of 130 units.

For this analysis, VMT data corresponding to LRDP buildout conditions is utilized. First, the current LRDP is analyzed using ITAM TC to determine the corresponding VMT characteristics associated with building out the University as currently envisioned by the LRDP. Second, the proposed increase in faculty and staff housing is analyzed using ITAM TC and compared to the current LRDP. Table 4.15-7 summarizes the ITAM TC VMT estimates for conditions with and without the change to the LRDP.

Table 4.15-7
ITAM TC VMT Estimates for LRDP Amendment

Area	Category	Baseline with Current LRDP	Baseline with LRDP Amendment	Net Change
Residential VMT				
Orange County	Residential VMT	56,376,796	56,380,405	3,609
	Population	3,227,570	3,227,924	354
Residential VMT per Population		17.467	17.466	-0.001
Employment VMT				
Orange County	Employment VMT (Non-Residential)	83,386,000	83,384,122	-1,878

As shown in Table 4.15-7, ITAM TC estimates that the net change of residential VMT is 3,609 with the LRDP amendment. ITAM TC also estimates that the project would result in a net increase in population of 354 and the amount of VMT per capita reduces with the LRDP amendment. The LRDP amendment also results in a net reduction of employment VMT. Therefore, the proposed LRDP amendment would not result in a significant impact.

Multimodal Transportation Networks Analysis

The project has also been evaluated qualitatively with consideration to the multimodal transportation network to evaluate the project's compatibility with the statutory goals for the VMT metric.

As discussed above, another goal of utilizing the VMT metric for evaluation of transportation impacts is to facilitate the "development of multimodal transportation networks." A multimodal transportation network provides opportunities for people to safely get to their destinations by means other than a single occupancy vehicle. Multimodal networks are a component of a "Complete Street" that address the needs of pedestrians, bicyclists, transit riders and motorists. The development of multimodal features within a development project is a TDM strategy listed by CAPCOA that would reduce VMT and GHG emissions. OPR also notes that the increase in transit ridership "should not be considered an adverse impact," noting that while the increase in ridership may slow transit service, it adds accessibility, destinations and proximity. When choices in transportation are available, single occupancy vehicle VMT is reduced. Projects that block access, remove, or interfere with pedestrian paths, bicycle paths, or transit stops would have a significant impact on VMT.

The project is accessible by Class II Bicycle Lanes on Los Trancos Drive and East Peltason Drive. This allows residents to access the existing Class I Multi-Use Paths and Class II Bicycle Lanes in and around the UCI campus, such as a multi-use path from Bridge Road to Ring Road on the west-side of the UCI campus and a multi-use path from Culver Drive to Ring Road on the eastside of the campus. These multi-use paths are open to pedestrians and bicycles and include a pedestrian bridge over East Peltason Drive at Palo Verde Road. Additionally, a new pedestrian bridge over East Peltason Drive near the project site is proposed as part of the project. The trails to the west of the Project—Neighborhood trail, 'The Shortcut' connection to UCI Ecological Preserve, and connection south of Peltason Drive to UCI Ecological Preserve—are part of the UCI Naturescape Vision which envisions connectivity between the project site and the main UCI campus.

UCI has a robust bicycle program that promotes bicycle transportation. In addition to bicycle infrastructure, UCI has BikeUCI Ambassadors, a Bicycle Advisory Group, and Bicycle Education and Enforcement (B.E.E.P). There are existing bike lanes on Campus Drive, East Peltason Drive, West Peltason Drive, California Avenue, Arroyo Drive, Adobe Circle South, Verano Road, Anteater Drive, Academy Way, Bridge Road and Bison Avenue that create a bicycle network to get in and around campus. The bike lanes on the streets noted above connect to the City of Irvine's bicycle network. The City of Irvine's 2015 Active Transportation Plan shows that the

existing bicycle facilities around the UCI campus, with the exception of Campus Drive, are low stress facilities, meaning the level of stress a bicyclist feels while using the facilities are low. The low level of stress creates a more pleasurable and appealing ride that would encourage students to ride their bike to get around campus.

In addition, UCI is a gold level "Bicycle Friendly University" and offers bicycle facilities, education and amenities such as bike registration, parking racks, bike festival, low cost bike sales, self-service bike repair stands and air pumping stations, and bike shops. As previously discussed, there are transit stops available for residents to use to get around the campus and to connect to OCTA transit service.

The development of the project would not remove any pedestrian or bicycle facilities or transit stops. Rather, the project would enhance such facilities and will likely increase the ridership on bus routes in the proximity of the project site due to the increase in population density that would occur due to the project. Sidewalks will be provided which will link to those on Los Trancos Drive, providing good pedestrian access. A new Class I trail will run east-west along East Peltason Drive and north-south along Los Trancos Drive, and will connect to the existing trail through the open space directly east of the project site, which provides access to the UCI campus by a signalized crosswalk west of Engineering Service Road. A new pedestrian bridge over East Peltason Drive near the project site is proposed by the University as part of the project. Through these project design features, accessibility will be increased and will also create a comfortable experience for pedestrians and bicyclists.

Since the project is enhancing the multimodal transportation network, it would have less than significant impact on VMT based on the multimodal transportation screening threshold.

Diversity of Land uses

The project has also been evaluated qualitatively with consideration to diversity of land uses to evaluate the project's compatibility with the statutory goals for the VMT metric.

As discussed above, a third goal of the VMT metric is the development of "a diversity of land uses". OPR's Technical Advisory notes that new land use projects alone will not reduce VMT, however "interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT".

The project is part of a larger plan, specifically, UCI's LRDP. The 2007 LRDP identified general land use developments to support future campus growth. Development of the LRDP and the resulting mix of land use contained in the 2007 LRDP follow planning principles that reflect the desired character for the campus. The principles are as follows:

- Accommodate the physical resources needed to support strategic academic goals
- Provide access while maintaining environmental quality
- Build a cohesive academic community

- Build and maintain quality residential neighborhoods
- Establish centers of activity to promote campus life
- Maintain human scale
- Maintain planning discipline to optimize valuable land resources
- Manage transportation needs proactively
- Unify the campus with linkages
- Preserve and enhance open space corridors to balance campus development
- Develop high-quality edges with neighboring communities
- Promote sustainable development practices

Application of such principles has created a campus with a diversity of land uses and a complimentary transportation network that has VMT reducing outcomes. This is reflected in the 2017 student survey that indicated 79 percent of students are using sustainable transportation methods such as walking, biking, transit, carpooling, or vanpooling. Similarly, 67 percent of employees are using the sustainable commuting options as their primary method of transportation. If a future project is contained within the LRDP or is consistent with the land use patterns of the LRDP, then the project would have less than significant impact on VMT. The project is generally consistent with the 2007 LRDP, meaning this project was strategically planned to balance the Academic, Support, Research and Development, and recreational uses of the campus. Therefore, since the project is generally consistent with the LRDP, and the LRDP was developed with sustainable development practices that balance land use, the environment and transportation, the project would have less than significant impact on VMT based on the diversity of land use screening threshold.

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

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

d) Inadequate Emergency Access: Less than Significant Impact

Construction staging is proposed to occur on the project site. Construction site access would occur via Los Trancos Drive, which bisects the project site. Haul routes during construction

would be along Los Trancos Drive, East Peltason Drive, and Bison Avenue. As described in Section 4.8, Hazards and Hazardous Materials, all lane closures during construction would be reviewed by the UCI Fire Marshal prior to construction to ensure adequate emergency access at all times. Therefore, with review of the proposed project by the UCI Fire Marshal, impacts related to emergency access during construction would be less than significant.

As described in Section 2.0, Project Description, operational vehicle access to the project site would occur via the existing Los Trancos Drive, which bisects the project site, and intersects and terminates at East Peltason Drive immediately to the north. Los Trancos Drive transitions into California Avenue approximately 0.5 mile to the south. Internal drive aisles would be constructed to access both the east and west sides from Los Trancos Drive. Development associated with implementation of the 2007 LRDP is subject to review by the UCI Fire Marshal and would ensure adequate emergency access to the project site and surrounding areas. Therefore, impacts due to inadequate emergency access during project operation would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.16 Tribal Cultural Resources

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

Discussion

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

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

The proposed project would demolish 100 existing faculty/staff apartment units to construct up to 220 for-sale, attached faculty/staff housing units. In addition, the LRDP amendment would increase faculty/staff housing capacity from 1,700 units to 1,830 units on the campus, which would accommodate the construction of the 220 units associated with the proposed project. No known archaeological resources are known on-site.

Recorded archaeological resources located within the UCI campus are summarized in Table 4.4-1 of the 2007 LRDP EIR. To date, no archaeological sites have been discovered on the project site. The closest known archaeological site, CA-ORA-179, is located off-site. Data recovery of this archaeological site occurred as part of a previous phase of University Hills; however, a portion of the site may still be intact. However, due to the distance of the known archeological site from the project site, impacts from construction would be unlikely. There is some possibility, however, that unknown archaeological remains could occur beneath the ground surface (LRDP EIR, page 4.4-4). Earth moving activities could potentially uncover previously undetected archaeological remains associated with prehistoric cultures, and a loss of a significant archaeological resource could result if such materials are not properly identified. With implementation of mitigation measures Cul-1C, as described in Section 4.4, Cultural Resources, and Cul-4A, as described in Section 4.6, Geology and Soils, which would require retention of an archaeological/paleontological monitor and a culturally-affiliated tribal monitor, impacts due to the proposed project and LRDP amendment that accommodates the project would be less than significant.

b) Resources Significance to a California Native American Tribe: Less than Significant Impact with Project-level Mitigation Incorporated

In accordance with AB 52, notification letters were mailed to the Gabrieleño Band of Mission Indians – Kizh Nation and Juaneño Band of Mission Indians – Acjachemen Nation on May 26, 2020. On June 16, 2020, the Gabrieleño Band of Mission Indians – Kizh Nation initiated consultation and requested that an affiliated Native American monitor be on-site during ground disturbance activities. UCI has agreed with the request and would have a Native American monitor on-site alongside an archeological/paleontological monitor during earthmoving activities for the project.

Additionally, UCI would implement mitigation measures Cul-1C, Cul-4A, and TCR-1, which would require an archaeological monitor during earthwork and procedures to be taken if cultural resources or tribal cultural resources are discovered. With the implementation of LRDP EIR mitigation measure Cul-1C and Cul-4A and project-specific TCR-1, impacts to tribal cultural resources due to the proposed project and LRDP amendment that accommodates the project would be reduced to a less than significant level.

Mitigation Measures

MM TCR-1: If subsurface deposits believed to be cultural or human in origin, or tribal cultural resources, are discovered during construction all work shall halt within a *50*-foot radius of the discovery, the Construction Manager shall immediately notify UCI Physical and Environmental Planning. The Construction Manager shall also immediately coordinate with the tribal monitor and an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology and subject to approval by UCI to evaluate the significance of the find and develop appropriate management recommendations. All management recommendations shall be provided to UCI in writing for UCI's review and approval. If recommended by the qualified professional and consulting tribes, and approved by UCI, this may include modification of the no-work radius.

The professional archaeologist must make a determination, based on professional judgement and supported by substantial evidence, within one business day of being notified, as to whether or not the find represents a cultural resource or has the potential to be a tribal cultural resource. The subsequent actions will be determined by the type of discovery, as described below. These include: 1) a work pause that, upon further investigation, is not actually a discovery and the work pause was simply needed in order to allow for closer examination of soil (a "false alarm"); 2) a work pause and subsequent action for discoveries that are clearly not related to tribal cultural resources, such as can and bottle dumps, artifacts of European origin, and remnants of built environment features; and 3) a work pause and subsequent action for discoveries that are likely related to tribal cultural resources, such as midden soil, bedrock mortars, groundstone, or other similar expressions.

Whenever there is question as to whether or not the discovery represents a tribal resource, culturally affiliated tribes shall be consulted in making the determination. The following processes shall apply, depending on the nature of the find, subject to the review and approval of UCI:

- Response to False Alarms: If the professional archaeologist in consultation with the tribal representative determines that the find is negative for any cultural indicators, then work may resume immediately upon notice to proceed from UCI's representative. No further notifications or tribal consultation is necessary, because the discovery is not a cultural resource of any kind. The professional archaeologist shall provide written documentation of this finding to UCI.

- Response to Non-Tribal Discoveries: If at the time of discovery a professional archaeologist and tribal representative determines that the find represents a non-tribal cultural resource from any time period or cultural affiliation, UCI shall be notified immediately, to consult on a finding of eligibility and implementation of appropriate treatment measures.

- Response to Tribal Discoveries: If the find represents a tribal or potentially tribal cultural resource that does not include human remains, the tribe and UCI shall be notified. UCI will consult with the tribe on a finding of eligibility and implement appropriate treatment

measures, if the find is determined to be either a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines, or a Tribal Cultural Resource, as defined in Section 21074 of the Public Resources Code. Preservation in place is the preferred treatment, if feasible. Work shall not resume within a 50-foot radius until UCI, through consultation as appropriate, determines that the site either: 1) is not a Historical Resource under CEQA, as defined in Section 15064.5(a) of the CEQA Guidelines; or 2) not a Tribal Cultural Resource, as defined in Section 21074 of the Public Resources Code; or 3) that the treatment measures have been completed to its satisfaction.

- Response to Human Remains: If the find includes human remains, or remains that are potentially human, the construction supervisor or on-site archaeologist shall ensure reasonable protection measures are taken to protect the discovery from disturbance (AB 2641) and shall notify UCI and the Orange County Coroner (per § 7050.5 of the Health and Safety Code). The provisions of § 7050.5 of the California Health and Safety Code, § 5097.98 of the California Public Resources Code, and Assembly Bill 2641 shall be implemented. If the Coroner determines the remains are Native American and not the result of a crime scene, the Coroner will notify the Native American Heritage Commission (NAHC), which then will designate a Native American Most Likely Descendant (MLD) for the Project (§ 5097.98 of the Public Resources Code). The designated MLD will have 48 hours from the time access to the property is granted to make recommendations concerning treatment of the remains. Public Resources Code § 5097.94 provides structure for mediation through the NAHC if necessary. If no agreement is reached, UCI shall rebury the remains in a respectful manner where they will not be further disturbed (§ 5097.98 of the Public Resources Code). This will also include either recording the site with the NAHC or the appropriate Information Center; using an open space or conservation zoning designation or easement; or recording a reinternment document with the Orange County Clerk's Office (AB 2641). Work shall not resume within the no-work radius until UCI, through consultation as appropriate, determines that the treatment measures have been completed to its satisfaction.

4.17 Utilities and Service Systems

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

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

Discussion

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

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

As discussed in Section 2.0, Project Description, initial analyses indicate that existing utility systems in the site vicinity have adequate capacity to serve the project. The proposed project would receive water services from the Irvine Ranch Water District (IRWD). Initial analyses indicate that existing utility systems have adequate capacity to serve the project and are available in the vicinity of the site. The proposed project would receive water services from the Irvine Ranch Water District (IRWD). Potable water would be connected through an existing 12-inch line located in Los Trancos Drive, recycled water through an existing 8-inch line in East Peltason Drive, sanitary sewer water through an existing 10-inch line in Los Trancos Drive, and fire water through a 12-inch line located in Los Trancos Drive. To provide on-site electricity, the houses would connect to a 12-kilovolt (kV) line that would connect to an existing pad mount equipment (PME) located on Peltason Drive. For telecommunications, the proposed project would connect to either AT&T or COX on Peltason Drive, as both currently provide service to University Hills. If any existing connections conflict with the project design, alternative and/or temporary utilities would be provided to all adjacent structures during relocation.

Construction impacts would occur as part of the general site development phase while utility improvements are installed; however, no alterations to existing main line facilities would be

required to provide adequate service to the project site that would require the construction of new off-site utility facilities. All connections would be coordinated with the appropriate service providers, IRWD and either AT&T or COX, which would be confirmed during the design phase of the project.

Therefore, neither the proposed project nor the LRDP amendment that accommodates the project would result in the construction of new or expansion of utility facilities and impacts would be less than significant. No mitigation is required.

b) Water Supplies: Less than Significant Impact with Project-level Mitigation Incorporated

c) Wastewater Capacity: Less than Significant Impact with Project-level Mitigation Incorporated

The 2015 IRWD Urban Water Management Plan (UWMP, 2015) projects district-wide water supply availability and demand through 2035, including the 2007 LRDP buildout. IRWD staff in consultation with UCI reviewed projected water service demand related to implementation of the 2007 LRDP for consistency with the 2005 UWMP and concluded that water supply reliability would not be compromised (LRDP EIR, page 4.14-17). Water supplies are projected to reach a maximum of 157,549 AF in 2025 through 2035, and water demand is expected to rise from 96,445 to 111,277 AF from 2025-2035. Under normal, dry, and multiple dry year scenarios, IRWD has sufficient supplies to buffer against inaccuracies in demand projections, future changes in land use, or alterations in supply availability. Furthermore, the proposed project would include water-efficient plumbing fixtures, kitchen equipment, and recycled water for irrigation to reduce water consumption in accordance with the GreenPoint Rating program, which the project would achieve LEED Silver equivalent or higher, per the UC Sustainable Practices Policy.

The Michaelson Water Recycling Plant (MWRP) currently treats up to 28 million gallons per day (mgd) of wastewater, and an additional upgrade to 33 mgd is scheduled to be completed in 2025. IRWD forecasts a total service area demand for wastewater treatment of 26.11 mgd by 2025, including the projected increase associated with full implementation of the 2007 LRDP. The 2007 LRDP EIR determined that the projected volume of treated wastewater by IRWD would be 26.1 MGD in 2025. With buildout of the 2007 LRDP, UCI's estimated flows could reach up to 4.3 MGD of the total 26.1 MGD. The 2007 LRDP EIR concluded that with UCI's funding contributions for capital costs, IRWD would have sufficient capacity to treat the projected 26.1 MGD of wastewater in 2025.

The proposed project and LRDP amendment that would accommodate the project would increase the faculty/staff housing units within University Hills above what was originally planned for in the LRDP and analyzed in the LRDP EIR; however, UCI is currently in consultation with IRWD regarding the preparation of a Sub Area Master Plan to confirm water supply and wastewater capacity within the project area, which would be completed during the design phase of the project. In addition, the increase in faculty/staff units associated with the LRDP amendment in comparison to LRDP buildout, which was included in the UWMP, is minimal. UCI continues to

cooperatively work with IRWD to reduce domestic water demand on campus consistent with UCI sustainability goals, as follows:

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

Therefore, due to the relatively small development increase, the project's water efficient features, ongoing coordination with IRWD regarding reduction in water demand throughout the campus, and with the implementation of project-specific mitigation measure UTL-1, which requires preparation of the SAMP to ensure adequate water supply and wastewater capacity prior to construction, impacts to water supplies and wastewater capacity due to the proposed project and the LRDP amendment would be reduced to a level of less than significant.

d) Solid Waste: Less than Significant Impact

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

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

e) Solid Waste Regulations: No Impact

The University of California is not subject to Assembly Bill 939 or other local agency regulations pertaining to solid waste management. Nonetheless, the University of California has adopted the Sustainable Practices Policy that requires campuses to undertake aggressive programs to reduce solid waste generation and disposal (LRDP EIR, 4.14-20). This includes prioritization of waste and recycling, including a life cycle assessment for reuse of building materials in accordance with the GreenPoint Rating program, which the project would achieve a goal of LEED Silver equivalent or higher, per the UC Sustainable Practices Policy. The project would not require any unique waste collection or disposal methods or facilities and would not conflict with or obstruct any Federal, State, or local programs to reduce solid waste generation. Therefore, the neither the proposed

project nor the LRDP amendment that accommodates the project would violate solid waste regulations and no impact would occur. No mitigation is required.

Mitigation Measures

UTL-1: During the design phase of the proposed project and prior to the start of construction, UCI shall retain a qualified professional engineer to prepare a Sub Area Master Plan in coordination with IRWD. A complete report of all findings shall be submitted to IRWD for review.

4.18 Wildfire

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

Discussion

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

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

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

In the event that either East Peltason Drive or Los Trancos Drive would need to be closed during project construction, access by fire protection, ambulances, police, or other emergency vehicles would be maintained for the active construction zones and surrounding land uses. All closures during construction would be reviewed by the UCI Fire Marshal, as discussed in Section 4.8, Hazards and Hazardous Materials, to ensure adequate emergency access at all times. Therefore, the proposed project and LRDP amendment that accommodates the project would not substantially impair an adopted emergency response plan and no impact would occur. No additional mitigation is required.

b) Expose Occupants to Wildfire: Less than Significant Impact

Areas designated as having a high wildfire risk generally have characteristics such as steep slopes, dense native vegetation, and limited vehicle access and water supplies. The proposed project site is characterized by gradual slopes but is surrounded on three sides with urban development. In addition, the project would connect to the 12-inch fire water line located in Los Trancos Drive and fire access would be provided via an internal loop road that has at minimum two egress/ingress locations intersecting with Los Trancos Drive. Fire access would also be provided from East Peltason Drive along the north boundary of the project site and Los Trance Drive. The area west of the project site, the UCI Ecological Preserve, is undeveloped. However, as discussed in the Section 4.8, Hazards and Hazardous Materials and the LRDP EIR, due to the limited quantities of native vegetation across the campus it is unlikely for a large scale wildfire to occur on the campus (page 4.6-36). Additionally, a minimum 100 feet of defensible space, in coordination with the Orange County Fire Authority (OCFA), would be implemented and maintained annually to serve as a fire protection barrier in the event that a fire would occur within the open space to the west of the project site.

The California State Board of Forestry and Fire Prevention has identified areas where the State has primary financial responsibility for preventing and suppressing fires, and are referred to as State Responsibility Areas (SRAs).[2] Lands where neither the State nor federal government has

[1] https://em.uci.edu/_pdf/emergency-operations-plan.pdf. Accessed September 5, 2021.

[2] https://bof.fire.ca.gov/projects-and-programs/state-responsibility-area-viewer/. Accessed March 15, 2019.

any legal responsibility for providing fire protection are referred to as Local Responsibility Areas (LRAs). UCI, including the proposed project site, is located in a LRA and the Orange County Fire Authority (OCFA) is responsible for fire prevention and suppression services. As shown in mapping by CalFire, the campus is not located in a LRA Very High Fire Hazard Severity Zone (VHFHSZ).[3] The proposed project and LRDP amendment that would accompany the project would not construct additional development in a high fire hazard area and would not hinder regional wildfire suppression efforts. Therefore, exposing project occupants to wildfire would be less than significant. No mitigation is required.

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

As discussed in 4.19(b), the project site is not located in a high wildfire risk area, and the site is adequately served by existing access roads and utilities, including connections in Los Trancos Drive and East Peltason Drive. Therefore, the proposed project and LRDP amendment would not require the installation or maintenance of infrastructure that would exacerbate fire risk and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation required.

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

4.19 Mandatory Findings of Significance

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

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

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

As discussed under Section 4.1 through 4.18, no significant environmental impacts that are not mitigatable were identified in the responses to questions regarding project effects. The proposed project site has been previously graded and disturbed and does not contain sensitive biological resources; however, project-level mitigation measures BIO-1, BIO-2, BIO-3, and BIO-4 would require nesting bird surveying prior to the start of construction, on-site biological monitoring during vegetation clearing, preparation of a landscaping plan in consultation with biologists, and a nesting bird management plan. There are no known historic resources on site, but in the event that a prehistoric, archaeological, or tribal cultural resource is discovered during grading, compliance with LRDP EIR mitigation measures Cul-1C, Cul-4A, Cul-4B, and Cul-4C and project-specific mitigation measure TCR-1, which requires archaeological and tribal monitoring during earthmoving activities, would reduce impacts due to the proposed project and the LRDP amendment that accommodates the project to a less than significant level.

b) Cumulatively Considerable Impacts: Less Than Significant Impact

The long-term environmental consequences resulting from the cumulative effect of completing development through implementation of the 2007 LRDP were thoroughly evaluated in the 2007 LRDP EIR. Although the LRDP Amendment would result in an increase of 130 additional faculty/staff units above what was previously analyzed in the 2007 LRDP EIR and would contribute to incremental impacts on the environment, no new or increased severity of impacts beyond what was anticipated in the 2007 LRDP EIR have been identified as a result of the analysis completed for the LRDP amendment in this IS/MND.

As discussed in Sections 4.1 through 4.18, project-level thresholds, which includes the impacts of the LRDP amendment which accommodates the University Hills Area 12 project only and would not result in additional housing units elsewhere on the campus, have been determined to be less than significant, no impact, or mitigated to a less than significant level. No new or increased severity of impacts that was not previously analyzed in the 2007 LRDP EIR have been identified as a result of the analysis completed for this IS/MND. Therefore, the proposed project and LRDP amendment would not result in cumulatively considerable impacts.

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

No significant impacts on human beings have been identified in this IS/MND. Short-term adverse

impacts involving construction phase dust, exhaust emissions, and noise would be less than significant with the incorporation and implementation of the identified routine control measures set forth in the LRDP EIR and project-specific mitigation. There is no evidence of site contamination with hazardous wastes or substances, and the project itself would not emit hazardous air emissions or involve consumption, generation, transport or disposal of dangerous quantities of hazardous materials or wastes not overseen by UCI's Environmental Health and Safety. Access to the project site by emergency vehicles would be maintained throughout the construction phases and the developed site would not constrain emergency access to any portion of the campus during project operation. Therefore, impacts from the proposed project and LRDP amendment due to direct or indirect effects on humans would be less than significant.

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APPENDIX A

Air Quality Assessment

Air Quality Assessment
University Hills Area 12 and LRDP Amendment Project
at the University of California, Irvine

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LIST OF ABBREVIATED TERMS

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

1 INTRODUCTION

This report documents the results of an Air Quality Assessment completed for the University of California Irvine (UCI) University Hills Area 12 Project ("Project" or "proposed Project"). The purpose of this Air Quality Assessment is to evaluate the potential construction and operational emissions associated with the proposed Project and determine the Project's level of impact on the environment.

1.1 Project Location

The Project is in Orange County (County), in the City of Irvine (City) within the UCI campus; see **Exhibit 1: Regional Vicinity**. The 9.8-acre Project site is located in UCI's South Campus to the south of the East Peltason Drive and Los Trancos Drive intersection; see **Exhibit 2: Site Vicinity**. Regional access to the Project site is provided via Interstate 405 (I-405) and State Route 73 (SR-73) located to the north and west, respectively. Local access to the Project site is provided via East Peltason Drive.

1.2 Project Description

The proposed Project would demolish the existing 100 faculty/staff multi-family residences within the Las Lomas apartment complex and construct approximately 220 dwelling units for UCI faculty/staff in two phases on the Project site; see **Exhibit 3: Conceptual Site Plan**. In addition, UCI is proposing to amend its existing 2007 Long Range Development Plan (LRDP) to accommodate the Project and increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. The proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP.

Project Construction and Phasing

Project construction is anticipated to occur in two phases. Phase 1 would be within the east portion of the Project site beginning in February 2022 and ending in September 2023. Phase 2 would be within the west side of the site beginning in July 2023 and ending in September 2025. Grading for the proposed improvements would require cut and fill to create building pads. The Project is anticipated to require approximately 24,562 cubic yards (CY) of excavation with 2,982 CY of soil export. Final grading plans would be approved by the UCI Building Official before Grading Permit issuance. All infrastructure (i.e., storm drain, water, wastewater, dry utilities, and street improvements) would be installed during grading. For purposes of this environmental analysis, opening year is assumed to be 2023 since Phase 1 will be open in September 2023.

Exhibit 1: Regional Vicinity

Exhibit 2: Site Vicinity

Source: Google Earth, 2021.

Exhibit 3: Conceptual Site Plan

Source: Ridge Landscape Architects, *Illustrative Site Plan*, 2021

2 ENVIRONMENTAL SETTING

2.1 Climate and Meteorology

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

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

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

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

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

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

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

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

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

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

2.2 Air Pollutants of Concern

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

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

Table 1: Air Contaminants and Associated Public Health Concerns

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

Table 1: Air Contaminants and Associated Public Health Concerns (continued)		
Pollutant	**Major Man-Made Sources**	**Human Health Effects**
Nitrogen Dioxide (NO_2)	A reddish-brown gas formed during fuel combustion for motor vehicles and industrial sources. Sources include motor vehicles, electric utilities, and other sources that burn fuel.	Respiratory irritant; aggravates lung and heart problems. Precursor to ozone. Contributes to global warming and nutrient overloading which deteriorates water quality. Causes brown discoloration of the atmosphere.
Lead (Pb)	Lead is a metal found naturally in the environment as well as in manufactured products. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Due to the phase out of leaded gasoline, metals processing is the major source of lead emissions to the air today. The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.	Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs. Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ.
Notes: 1. Volatile Organic Compounds (VOCs or ROGs) are hydrocarbons/organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases including ROGs and VOCs. Both ROGs and VOCs are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. The major sources of hydrocarbons are combustion engine exhaust, oil refineries, and oil-fueled power plants; other common sources are petroleum fuels, solvents, dry cleaning solutions, and paint (via evaporation).		
Source: California Air Pollution Control Officers Association, *Health Effects*, http://www.capcoa.org/health-effects/, accessed August 19, 2021.		

Toxic Air Contaminants

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

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

Ambient Air Quality

CARB monitors ambient air quality at approximately 250 air monitoring stations across the state. Air quality monitoring stations usually measure pollutant concentrations ten feet above ground level; therefore, air quality is often referred to in terms of ground-level concentrations. Existing levels of

ambient air quality, historical trends, and projections near the Project site are documented by measurements made by the South Coast Air Quality Management District (SCAQMD), the SCAB's air pollution regulatory agency that maintains air quality monitoring stations, which process ambient air quality measurements.

Ozone (O_3), Nitrogen Dioxide (NO_2), and particulate matter (PM_{10} and $PM_{2.5}$) are pollutants of concern in the SCAB. The closest air monitoring station to the proposed Project site that monitors ambient concentrations for O_3 and NO_2 is the Costa Mesa – Mesa Verde Drive Monitoring Station (located approximately 4.7 miles northwest of the Project). The closest monitoring station that measures PM_{10} and $PM_{2.5}$ is the Mission Viejo – 26081 Via Pera Monitoring Station (located approximately 10.2 miles east of the Project). Local air quality data from 2017 to 2019 are provided in **Table 2: Ambient Air Quality Data. Table 2** lists the monitored maximum concentrations and number of exceedances of federal or state air quality standards for each year.

Table 2: Ambient Air Quality Data

Pollutant	2017	2018	2019
Ozone (O_3)[1]			
1-hour Maximum Concentration (ppm)	0.088	0.121[2]	0.106 [2]
8-hour Maximum Concentration (ppm)	0.080	0.088[2]	0.087 [2]
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	0	2[2]	3 [2]
NAAQS 8-hour (>0.070 ppm)	4	9[2]	11[2]
Carbon Monoxide (CO)[1]			
1-hour Maximum Concentration (ppm)	3.837	3.025	2.635
Number of Days Standard Exceeded			
NAAQS 1-hour (>35 ppm)	0	0	0
CAAQS 1-hour (>20 ppm)	0	0	0
Nitrogen Dioxide (NO_2)[1]			
1-hour Maximum Concentration (ppm)	0.0453	-	-
Number of Days Standard Exceeded			
NAAQS 1-hour (>0.100 ppm)	0	-	-
CAAQS 1-hour (>0.18 ppm)	0	-	-
Particulate Matter Less Than 10 Microns (PM_{10})[2]			
National 24-hour Maximum Concentration	58.2	55.6	45.1
State 24-hour Maximum Concentration	58.2	55.6	44.2
State Annual Average Concentration (20 µg/m^3)	18.8	19.1	16.7
Number of Days Standard Exceeded			
NAAQS 24-hour (>150 µg/m^3)	0	0	0
CAAQS 24-hour (>50 µg/m^3)	7	6	0
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)[2]			
National 24-hour Maximum Concentration	19.5	38.9	20.8
State 24-hour Maximum Concentration	19.5	38.9	20.8
Number of Days Standard Exceeded			
NAAQS 24-hour (>35 µg/m^3)	0	1	0

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

1. Measurements at Costa Mesa – Mesa Verde Drive Monitoring Station, 2850 Mesa Verde Drive East, Costa Mesa, CA 92626 (CARB# 70112).
2. Measurements at Mission Viejo – 26081 Via Pera Monitoring Station, 26081 Via Pera, Mission Viejo, CA 92691 (CARB# 30002).

Source: All pollutant measurements are from the CARB Aerometric Data Analysis and Management system database (https://www.arb.ca.gov/adam) except for CO, which were retrieved from the CARB Air Quality and Meteorological Information System (https://www.arb.ca.gov/aqmis2/aqdselect.php).

2.3 Sensitive Receptors

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

Table 3: Sensitive Receptors

Receptor Type/Description	Distance and Direction from the Project Site
Single Family Residences	Adjacent to the east
Single Family Residences	Adjacent to the south
Aldrich Park	950 feet to the north
Santiago Apartments	955 feet to the east
UCI Middle Earth Housing	1,002 feet to the northeast
UCI Educational Facilities	1,173 feet to the north
UCI Palo Verde Housing	1,469 feet to the east
UCI Campus Village Housing	1,470 feet to the northwest

3 REGULATORY SETTING

3.1 Federal

Federal Clean Air Act

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

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

3.2 State of California

California Air Resources Board

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

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

Table 4: State and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	State Standards[1]	Federal Standards[2]
Ozone (O_3) [2, 5, 7]	8 Hour	0.070 ppm (137 µg/m^3)	0.070 ppm
	1 Hour	0.09 ppm (180 µg/m^3)	NA
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)
	1 Hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)
Nitrogen Dioxide (NO_2)	1 Hour	0.18 ppm (339 µg/m^3)	0.10 ppm[11]
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)
Sulfur Dioxide (SO_2) [8]	24 Hour	0.04 ppm (105 µg/m^3)	0.14 ppm (365 µg/m^3)
	1 Hour	0.25 ppm (655 µg/m^3)	0.075 ppm (196 µg/m^3)
	Annual Arithmetic Mean	NA	0.03 ppm (80 µg/m^3)
Particulate Matter (PM_{10}) [1, 3, 6]	24-Hour	50 µg/m^3	150 µg/m^3
	Annual Arithmetic Mean	20 µg/m^3	NA
Fine Particulate Matter ($PM_{2.5}$) [3, 4, 6, 9]	24-Hour	NA	35 µg/m^3
	Annual Arithmetic Mean	12 µg/m^3	12 µg/m^3
Sulfates (SO_{4-2})	24 Hour	25 µg/m^3	NA
Lead (Pb) [10, 11]	30-Day Average	1.5 µg/m^3	NA
	Calendar Quarter	NA	1.5 µg/m^3
	Rolling 3-Month Average	NA	0.15 µg/m^3
Hydrogen Sulfide (H_2S)	1 Hour	0.03 ppm (42 µg/m^3)	NA
Vinyl Chloride (C_2H_3Cl) [10]	24 Hour	0.01 ppm (26 µg/m^3)	NA

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

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

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

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

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

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

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

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

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

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

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

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

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

3.3 Regional

South Coast Air Quality Management District

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

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

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

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

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

The state and federal attainment status designations for the SCAB are summarized in **Table 5: South Coast Air Basin Attainment Status**. The SCAB is currently designated as a nonattainment area with respect to the State O_3, PM_{10}, and $PM_{2.5}$ standards, as well as the national 8-hour O_3 and $PM_{2.5}$ standards. The SCAB is designated as attainment or unclassified for the remaining state and federal standards.

Table 5: South Coast Air Basin Attainment Status		
Pollutant	**State**	**Federal**
Ozone (O_3) (1 Hour Standard)	Non-Attainment	Non-Attainment (Extreme)
Ozone (O_3) (8 Hour Standard)	Non-Attainment	Non-Attainment (Extreme)
Particulate Matter ($PM_{2.5}$) (24 Hour Standard)	–	Non-Attainment (Serious)
Particulate Matter ($PM_{2.5}$) (Annual Standard)	Non-Attainment	Non-Attainment (Moderate)
Particulate Matter (PM_{10}) (24 Hour Standard)	Non-Attainment	Attainment (Maintenance)
Particulate Matter (PM_{10}) (Annual Standard)	Non-Attainment	–
Carbon Monoxide (CO) (1 Hour Standard)	Attainment	Attainment (Maintenance)
Carbon Monoxide (CO) (8 Hour Standard)	Attainment	Attainment (Maintenance)
Nitrogen Dioxide (NO_2) (1 Hour Standard)	Attainment	Unclassifiable/Attainment
Nitrogen Dioxide (NO_2) (Annual Standard)	Attainment	Attainment (Maintenance)
Sulfur Dioxide (SO_2) (1 Hour Standard)	Attainment	Unclassifiable/Attainment
Sulfur Dioxide (SO_2) (24 Hour Standard)	Attainment	–
Lead (Pb) (30 Day Standard)	–	Unclassifiable/Attainment
Lead (Pb) (3 Month Standard)	Attainment	–
Sulfates (SO_{4-2}) (24 Hour Standard)	Attainment	–
Hydrogen Sulfide (H_2S) (1 Hour Standard)	Unclassified	–
Source: South Coast Air Quality Management District, *Air Quality Management Plan*, 2016; United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants (Green Book)*, 2021.		

The following is a list of SCAQMD rules that are required of construction activities associated with the proposed Project:

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

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

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

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

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

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

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

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

3.4 University of California

Environmental Health and Safety Department

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

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

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 Air Quality Thresholds

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

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

South Coast Air Quality Management District Thresholds

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

Table 6: South Coast Air Quality Management District Emissions Thresholds

Criteria Air Pollutants and Precursors (Regional)	Construction-Related Average Daily Emissions (pounds/day)	Operational-Related Average Daily Emission (pounds/day)
Reactive Organic Gases (ROG)	75	55
Carbon Monoxide (CO)	550	550
Nitrogen Oxides (NO_X)	100	55
Sulfur Oxides (SO_X)	150	150
Coarse Particulates (PM_{10})	150	150
Fine Particulates ($PM_{2.5}$)	55	55

Source: South Coast Air Quality Management District, *South Coast AQMD Air Quality Significance Thresholds*, 2019.

Localized Carbon Monoxide

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

Localized Significance Thresholds

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

Table 7: Local Significance Thresholds (Construction/Operations)

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

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

4.2 Methodology

This air quality impact analysis considers construction and operational impacts associated with the proposed Project. Construction equipment, trucks, worker vehicles, and ground-disturbing activities associated with proposed Project construction would generate emissions of criteria air pollutants and precursors. Air quality impacts were assessed according to CARB and SCAQMD recommended methodologies. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model version 2020.4.0 (CalEEMod). CalEEMod is a statewide land use emissions computer model designed to quantify potential criteria pollutant emissions associated with both construction and operations from a variety of land use projects.

5 POTENTIAL IMPACTS AND MITIGATION

5.1 Air Quality Analysis

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

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

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

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

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

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts, and SCAG's growth forecasts were defined in consultation with local governments and with reference to local general plans. The proposed Project is consistent with the goals of the UCI *Long Range Development Plan*[2] (LRDP) and *Strategic Plan*[3] and would not require a zone change

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

or a City of Irvine *General Plan* (IGP) amendment. Figure 5-2 of the LRDP shows the Project site as designated as Faculty and Staff Housing. The proposed Project is consistent with the primary uses allowed under Faculty and Staff Housing land use category, which include residential facilities for University faculty and staff. Compatible uses include residential parking, childcare, pre-school and elementary school facilities, recreation facilities, community meeting space, and other residential support uses. Additionally, Figure A-3 in the IGP Land Use Element shows the Project site in an Institutional land use zone suitable for public and educational facilities. The Project's forecast population growth would be nominal and is already anticipated in the IGP (and accordingly the projections within the AQMP). Additionally, it would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. Thus, a less than significant impact would occur, as the Project is also consistent with the second criterion.

The LRDP EIR found less than significant impacts related to consistency with the AQMP. UCI is proposing to amend its existing 2007 *Long Range Development Plan*[4] (LRDP) to accommodate the project and increase faculty/staff housing units by 130 for a total of 1,830 dwelling units.

Although the Project proposes to amend the 2007 LRDP housing program to include additional faculty/staff housing units, the proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP. The Project would redevelop the site at a higher density than what currently exists on-site. Higher building densities across the campus would accommodate the LRDP Amendment's increased capacity. The LRDP amendment would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations. Therefore, the Project would be consistent with the growth projections in the 2007 LRDP and the goals and policies in the UCI Strategic Plan.

In addition, the Project would not require a zone change or a City of Irvine General Plan (General Plan) amendment and would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. The Project also supports SCAG RTP/SCS and SCAQMD policies promoting infill development to reduce emissions. Thus, a less than significant impact would occur, as the Project is also consistent with the second criterion.

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

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

[4] University of California, Irvine, *Long Range Development Plan*, 2007.

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

Construction Emissions

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

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

The duration of construction activities associated with the proposed Project are estimated to last up to 44 months in two phases. The Project would demolish the existing 100 dwelling units and is anticipated to require approximately 24,562 CY of excavation with 2,982 CY of soil export. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. See **Appendix A: Air Quality Data** for more information regarding the construction assumptions used in this analysis. The Project's predicted maximum daily construction-related emissions are summarized in **Table 8: Construction-Related Emissions**. As shown in **Table 8**, all criteria pollutant emissions would remain below their respective thresholds.

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

Construction Year	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
2022	3.71	39.75	29.93	0.07	9.07	5.27
2023	2.20	16.08	22.62	0.05	2.78	1.23
2024	2.06	15.10	22.14	0.05	2.69	1.15
2025	33.11	14.09	21.73	0.05	2.61	1.07
SCAQMD Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

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

Source: CalEEMod version 2020.4.0. Refer to **Appendix A** for model outputs.

Operational Emissions

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

Table 9: Long-Term Operational Emissions (Maximum Pounds Per Day)

Source	Reactive Organic Gases (ROG)	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Sulfur Dioxide (SO_2)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Summer Emissions						
Area Source Emissions	9.63	3.31	19.49	0.02	0.35	0.35
Energy Emissions	0.11	0.92	0.39	0.01	0.07	0.07
Mobile Emissions	5.55	5.76	56.95	0.13	14.35	3.88
Total Emissions	15.29	9.99	76.83	0.16	14.77	4.31
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Winter Emissions						
Area Source Emissions	9.63	3.31	19.49	0.02	0.35	0.35
Energy Emissions	0.11	0.92	0.39	0.01	0.07	0.07
Mobile Emissions	5.52	6.19	56.14	0.13	14.34	3.88
Total Emissions	15.26	10.42	76.02	0.16	14.77	4.31
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to **Appendix A** for model outputs.

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

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

Mobile Source Emissions. Mobile sources are emissions from motor vehicles, including tailpipe and evaporative emissions. Depending upon the pollutant being discussed, the potential air quality impact may be of either regional or local concern. For example, ROG, NO_X, PM_{10}, and $PM_{2.5}$ are all pollutants of regional concern. NO_X and ROG react with sunlight to form O_3, known as photochemical smog.

Additionally, wind currents readily transport PM_{10} and $PM_{2.5}$. However, CO tends to be a localized pollutant, dispersing rapidly at the source.

Project-generated vehicle emissions were estimated using CalEEMod, as recommended by the SCAQMD. The Project's trip generation estimates were based on trip generation rates from the Project Traffic Study. The Project would generate 1,980 average daily trips (ADT) (1,197 net ADT). As shown in **Table 9**, mobile source emissions would not exceed SCAQMD thresholds for criteria pollutants. Therefore, impacts associated with mobile source emissions would be less than significant.

Cumulative Construction Emissions

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

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

Cumulative Operational Impacts

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

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

LRDP Amendment

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

As described above, although the Project proposes to amend the 2007 LRDP housing program to include additional faculty/staff housing units, the proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP. The Project would redevelop the site at a higher density than what currently exists on-site. Higher building densities across the campus would accommodate the LRDP Amendment's increased capacity. The LRDP amendment would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations. Operational mitigation measures in the LRDP EIR include requiring UCI to continue implementing its alternative transportation program, complying with SCAQMD Rules, and minimizing area source emissions (e.g., cooling and heating systems, landscaping, consumer products, etc.).

The LRDP Amendment represents a small proportion of what was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of a previously identified significant impacts evaluated in the LRDP EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the Final LRDP EIR was certified is available that would change the significance determination in the LRDP EIR.

Standard Conditions and Requirements:

SC AQ-1 Construction contractors are required to comply with South Coast Air Quality Management District's (SCAQMD's) Rules 402 and 403 to minimize construction emissions of dust and particulates. The measures include, but are not limited to, the following:

- Portions of a construction site to remain inactive longer than a period of three months will be seeded and watered until grass cover is grown or otherwise stabilized.
- All on-site roads will be paved as soon as feasible or watered periodically or chemically stabilized.
- All material transported off site will be either sufficiently watered or securely covered to prevent excessive amounts of dust.
- The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized at all times.
- Where vehicles leave a construction site and enter adjacent public streets, the streets will be swept daily or washed down at the end of the workday to remove soil tracked onto the paved surface.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

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

Localized Construction Significance Analysis

The nearest sensitive receptors to the Project site are the single-family residences located approximately 50 feet (15 meters) east of the Project site. To identify impacts to sensitive receptors, the SCAQMD recommends addressing LSTs for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the *Final Localized Significance Threshold Methodology* (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts from Project-specific emissions.

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

Table 10: Equipment-Specific Grading Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Graded per 8-Hour Day	Operating Hours per Day	Acres Graded per Day
Site Preparation	Graders	1	0.5	8	0.5
	Dozers	3	0.5	8	1.5
	Scrapers	0	1.0	8	0
	Tractors/Loaders/Backhoes	4	0.5	8	2
				Total Acres Graded per Day	**4**

Source: CalEEMod version 2020.4.0. Refer to **Appendix A** for model outputs.

The SCAQMD's methodology states that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs." Therefore, for the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The nearest sensitive receptors to the Project site are the single-family residences located approximately 50 feet (15 meters) east of the Project site. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 25 meters were utilized in this analysis for receptors closer than 25 meters. **Table 11: Localized Significance of Construction Emissions**, presents the results of localized emissions during Project construction. **Table 11** shows that the emissions of these pollutants on the peak day of Project construction would not result

[5] South Coast Air Quality Management District, *Appendix C – Mass Rate LST Look-up Tables*, 2009.

in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the Project would result in a less than significant impact concerning LSTs during construction activities.

Table 11: Localized Significance of Construction Emissions (Maximum Pounds Per Day)

Construction Activity	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
Demolition (2022)	25.72	20.59	2.02	1.27
Site Preparation (2022)	33.08	19.70	8.90	5.23
Grading (2022)	38.84	29.04	5.05	2.86
Building Construction (2022)	15.62	16.36	0.81	0.76
Building Construction (2023)	14.38	16.24	0.70	0.66
Building Construction (2024)	13.44	16.17	0.61	0.58
Building Construction (2025)	12.47	16.08	0.53	0.50
Paving (2025)	8.58	14.58	0.42	0.39
Architectural Coating (2025)	1.15	1.81	0.05	0.05
SCAQMD Localized Screening Threshold (adjusted for 4 acres at 25 meters)	*175*	*1,461*	*12*	*8*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to **Appendix A** for model outputs.

Localized Operational Significance Analysis

LSTs for receptors located at 25 meters for SRA 20 were utilized in this analysis. As the Project site is 11 acres, the 5-acre LST threshold was conservatively used. The five-acre localized significance threshold is conservative as the thresholds increase with project size. The on-site operational emissions are compared to the LST thresholds in **Table 12: Localized Significance of Operational Emissions**. **Table 12** shows that the maximum daily emissions of on-site pollutants during Project operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, the Project would result in a less than significant impact concerning LSTs during operational activities.

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

Activity	Nitrogen Oxide (NO_x)	Carbon Monoxide (CO)	Coarse Particulate Matter (PM_{10})	Fine Particulate Matter ($PM_{2.5}$)
On-Site (Area and Energy Sources)	4.23	19.86	0.42	0.42
SCAQMD Localized Screening Threshold (adjusted for 5 acres at 25 meters)	*197*	*1,711*	*4*	*2*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to **Appendix** A for model outputs.

Criteria Pollutant Health Impacts

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

As previously discussed, Project emissions would be less than significant and would not exceed SCAQMD thresholds (refer to **Table 8** and **Table 9**). Localized effects of on-site project emissions on nearby receptors were also found to be less than significant (refer to **Table 11** and **Table 12**). The LSTs represent the maximum emissions from a project that are not expected to cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard. The LSTs were developed by the SCAQMD based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor. The ambient air quality standards establish the levels of air quality necessary, with an adequate margin of safety, to protect public health, including protecting the health of sensitive populations such as asthmatics, children, and the elderly. As shown above, project-related emissions would not exceed the regional thresholds or the LSTs, and therefore would not exceed the ambient air quality standards or cause an increase in the frequency or severity of existing violations of air quality standards. Therefore, sensitive receptors would not be exposed to criteria pollutant levels in excess of the health-based ambient air quality standards.

Carbon Monoxide Hotspots

An analysis of CO "hot spots" is needed to determine whether the change in the level of service of an intersection resulting from the proposed Project would have the potential to result in exceedances of the CAAQS or NAAQS. It has long been recognized that CO exceedances are caused by vehicular emissions, primarily when vehicles are idling at intersections. Vehicle emissions standards have become increasingly stringent in the last 20 years. Currently, the CO standard in California is a maximum of 3.4 grams per mile for passenger cars (requirements for certain vehicles are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of control technology on industrial facilities, CO concentrations have steadily declined.

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. The SCAB was re-designated as attainment in 2007 and is no longer addressed in the SCAQMD's AQMP. The 2003 AQMP is the most recent version that addresses CO concentrations. As part of the SCAQMD *CO Hotspot Analysis*, the Wilshire Boulevard/Veteran Avenue intersection, one of the most congested intersections in Southern California with approximately 100,000 ADT, was modeled for CO concentrations. This modeling effort identified a CO concentration high of 4.6 ppm, which is well below the 35-ppm Federal standard. The proposed Project considered herein would not produce the volume of traffic required to generate a CO hot spot in the context of SCAQMD's *CO Hotspot Analysis*. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection even as it accommodates 100,000 ADT, it can be reasonably inferred that CO hotspots would not be experienced at any intersections in the Project vicinity resulting from 1,980 ADT attributable to the Project. Therefore, impacts would be less than significant.

Construction-Related Diesel Particulate Matter

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

The use of diesel-powered construction equipment would be temporary and episodic. The duration of exposure would be short and exhaust from construction equipment is highly dispersive and concentrations of DPM dissipate rapidly. Current models and methodologies for conducting health risk assessments are associated with longer-term exposure periods of 9, 30, and 70 years, which do not correlate well with the temporary and highly variable nature of construction activities. The closest sensitive receptors to the Project site are located approximately 50 feet from the Project limits, and further from the major Project construction areas.

Project construction involves phased activities in several areas across the site and the Project would not require the extensive use of heavy-duty construction equipment or diesel trucks in any one location over the duration of development, which would limit the exposure of any proximate individual sensitive receptor to TACs. Additionally, construction projects contained on a site of this small size generally represent less than significant health risk impacts due to (1) limitations on the off-road diesel equipment able to operate and thus a reduced amount of generated DPM; (2) the reduced amount of dust-generating ground disturbance possible compared to larger construction sites; and (3) the reduced duration of construction activities compared to the development of larger sites.

Construction is subject to and would comply with California regulations (e.g., California Code of Regulations, Title 13, Division 3, Article 1, Chapter 10, Sections 2485 and 2449), which reduce DPM and criteria pollutant emissions from in-use off-road diesel-fueled vehicles and limit the idling of heavy-duty construction equipment to no more than five minutes. These regulations would further reduce nearby sensitive receptors' exposure to temporary and variable DPM emissions. Given the temporary and intermittent nature of construction activities likely to occur within specific locations in the Project site (i.e., construction is not likely to occur in any one location for an extended time), the dose of DPM of any one receptor is exposed to would be limited. Therefore, considering the relatively short duration of DPM-emitting construction activity at any one location of the plan area and the highly dispersive properties of DPM, sensitive receptors would not be exposed to substantial concentrations of construction-related TAC emissions.

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

LRDP Amendment

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

The LRDP Amendment would increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. However, no changes to student enrollment or faculty/staff populations beyond what was analyzed in the

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

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

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

The SCAQMD *CEQA Air Quality Handbook* identifies certain land uses as sources of odors. These land uses include agriculture (farming and livestock), wastewater treatment plants, food processing plants, chemical plants, composting facilities, refineries, landfills, dairies, and fiberglass molding. The proposed Project would not include any of the land uses that have been identified by the SCAQMD as odor sources.

During construction-related activities, some odors (not substantial pollutant concentrations) that may be detected are those typical of construction vehicles (e.g., diesel exhaust from grading and construction equipment). These odors are a temporary short-term impact that is typical of construction projects and would disperse rapidly. The project would not include any of the land uses that have been identified by the SCAQMD as odor sources. Therefore, the proposed Project would not create objectionable odors.

LRDP Amendment

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

Mitigation Measures: No mitigation is required.

Level of Significance: No impact.

6 REFERENCES

1. California Air Pollution Control Officers Association, *Health Effects*, 2018.
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5. California Air Resources Board, *Current Air Quality Standards*, 2016.
6. California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, 2000.
7. City of Irvine, *General Plan*, 2015.
8. Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, 2015.
9. Ridge Landscape Architects, *Illustrative Site Plan*, 2021.
10. Southern California Association of Governments, *Regional Transportation Plan/Sustainable Communities Strategy*, 2016.
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14. Stantec, *UCI University Hills Area 12 Faculty Housing Project,* Traffic Study, 2021.
15. University of California, Irvine, *Long Range Development Plan*, 2007.
16. University of California, Irvine, *Strategic Plan*, 2016.
17. United States Environmental Protection Agency, *National Ambient Air Quality Standards Table*, 2016.
18. United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants*, 2018.
19. United States Environmental Protection Agency, *Policy Assessment for the Review of the Lead National Ambient Air Quality Standards*, 2013.

Appendix A

Air Quality Modeling Data

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

UCI Area 12 Faculty/Staff Housing (CalEEMod)

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	168.00	Space	1.51	67,200.00	0
City Park	0.22	Acre	0.22	9,583.20	0
Condo/Townhouse	220.00	Dwelling Unit	9.27	404,012.00	629

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - per site plan

Construction Phase - anticipated construction schedule

Demolition -

Grading -

Vehicle Trips - Per Traffic Study

Woodstoves - No woodfire places per SCAQMD rule

Construction Off-road Equipment Mitigation - SCAQMD Rule compliance

Water Mitigation -

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	15
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	50.00
tblConstructionPhase	NumDays	10.00	50.00
tblConstructionPhase	NumDays	30.00	70.00
tblConstructionPhase	NumDays	300.00	600.00
tblConstructionPhase	NumDays	20.00	80.00
tblConstructionPhase	NumDays	20.00	80.00
tblFireplaces	NumberWood	11.00	0.00
tblGrading	MaterialExported	0.00	2,982.00
tblLandUse	LandUseSquareFeet	220,000.00	404,012.00
tblLandUse	LotAcreage	13.75	9.27
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	8.14	9.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	6.28	9.00
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	7.32	9.00
tblWoodstoves	NumberCatalytic	11.00	0.00
tblWoodstoves	NumberNoncatalytic	11.00	0.00

2.0 Emissions Summary

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7066	39.7135	29.9327	0.0672	19.8582	1.6424	21.4719	10.1558	1.5112	11.6404	0.0000	6,569.8893	6,569.8893	1.9832	0.1493	6,637.9827
2023	2.1473	15.9909	22.6156	0.0514	2.3651	0.7171	3.0822	0.6324	0.6747	1.3071	0.0000	5,109.7708	5,109.7708	0.6901	0.1413	5,169.1408
2024	2.0133	15.0111	22.1373	0.0508	2.3651	0.6305	2.9956	0.6324	0.5929	1.2254	0.0000	5,054.8781	5,054.8781	0.6833	0.1376	5,112.9745
2025	33.1017	14.0018	21.7296	0.0500	2.3651	0.5443	2.9094	0.6324	0.5119	1.1444	0.0000	4,998.5518	4,998.5518	0.7382	0.1340	5,055.4063
Maximum	**33.1017**	**39.7135**	**29.9327**	**0.0672**	**19.8582**	**1.6424**	**21.4719**	**10.1558**	**1.5112**	**11.6404**	**0.0000**	**6,569.8893**	**6,569.8893**	**1.9832**	**0.1493**	**6,637.9827**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7066	39.7135	29.9327	0.0672	7.4579	1.6424	9.0715	3.7899	1.5112	5.2745	0.0000	6,569.8893	6,569.8893	1.9832	0.1493	6,637.9827
2023	2.1473	15.9909	22.6156	0.0514	2.0621	0.7171	2.7792	0.5581	0.6747	1.2327	0.0000	5,109.7708	5,109.7708	0.6901	0.1413	5,169.1408
2024	2.0133	15.0111	22.1373	0.0508	2.0621	0.6305	2.6926	0.5581	0.5929	1.1510	0.0000	5,054.8781	5,054.8781	0.6833	0.1376	5,112.9745
2025	33.1017	14.0018	21.7296	0.0500	2.0621	0.5443	2.6064	0.5581	0.5119	1.0700	0.0000	4,998.5518	4,998.5518	0.7382	0.1340	5,055.4063
Maximum	**33.1017**	**39.7135**	**29.9327**	**0.0672**	**7.4579**	**1.6424**	**9.0715**	**3.7899**	**1.5112**	**5.2745**	**0.0000**	**6,569.8893**	**6,569.8893**	**1.9832**	**0.1493**	**6,637.9827**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.38**	**0.00**	**43.70**	**54.67**	**0.00**	**43.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387
Energy	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Mobile	5.5522	5.7635	56.9456	0.1344	14.2562	0.0901	14.3463	3.7999	0.0838	3.8836		13,827.7957	13,827.7957	0.7898	0.5331	14,006.3991
Total	**15.2924**	**9.9917**	**76.8273**	**0.1611**	**14.2562**	**0.5156**	**14.7718**	**3.7999**	**0.5092**	**4.3091**	**0.0000**	**18,990.9240**	**18,990.9240**	**0.9196**	**0.6271**	**19,200.8029**

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	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387
Energy	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Mobile	5.5522	5.7635	56.9456	0.1344	14.2562	0.0901	14.3463	3.7999	0.0838	3.8836		13,827.7957	13,827.7957	0.7898	0.5331	14,006.3991
Total	**15.2924**	**9.9917**	**76.8273**	**0.1611**	**14.2562**	**0.5156**	**14.7718**	**3.7999**	**0.5092**	**4.3091**	**0.0000**	**18,990.9240**	**18,990.9240**	**0.9196**	**0.6271**	**19,200.8029**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

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	2/1/2022	4/11/2022	5	50	
2	Site Preparation	Site Preparation	4/12/2022	6/20/2022	5	50	
3	Grading	Grading	6/21/2022	9/26/2022	5	70	
4	Building Construction	Building Construction	9/27/2022	1/13/2025	5	600	
5	Paving	Paving	1/14/2025	5/5/2025	5	80	
6	Architectural Coating	Architectural Coating	5/1/2025	8/20/2025	5	80	

Acres of Grading (Site Preparation Phase): 75

Acres of Grading (Grading Phase): 210

Acres of Paving: 1.51

Residential Indoor: 818,124; Residential Outdoor: 272,708; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,032 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	487.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	373.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	191.00	36.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	38.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

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					2.1065	0.0000	2.1065	0.3190	0.0000	0.3190			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**2.1065**	**1.2427**	**3.3492**	**0.3190**	**1.1553**	**1.4742**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	0.0395	1.5164	0.4260	5.8100e-003	0.1699	0.0115	0.1814	0.0465	0.0110	0.0575		658.5179	658.5179	0.0628	0.1055	691.5174
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
Worker	0.0451	0.0303	0.4936	1.4600e-003	0.1677	9.0000e-004	0.1686	0.0445	8.3000e-004	0.0453		148.6620	148.6620	3.4700e-003	3.3200e-003	149.7380
Total	**0.0846**	**1.5468**	**0.9196**	**7.2700e-003**	**0.3375**	**0.0124**	**0.3499**	**0.0910**	**0.0118**	**0.1028**		**807.1799**	**807.1799**	**0.0662**	**0.1088**	**841.2554**

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					0.7805	0.0000	0.7805	0.1182	0.0000	0.1182			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.7805**	**1.2427**	**2.0231**	**0.1182**	**1.1553**	**1.2734**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	0.0395	1.5164	0.4260	5.8100e-003	0.1506	0.0115	0.1620	0.0418	0.0110	0.0528		658.5179	658.5179	0.0628	0.1055	691.5174
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
Worker	0.0451	0.0303	0.4936	1.4600e-003	0.1458	9.0000e-004	0.1467	0.0391	8.3000e-004	0.0399		148.6620	148.6620	3.4700e-003	3.3200e-003	149.7380
Total	**0.0846**	**1.5468**	**0.9196**	**7.2700e-003**	**0.2964**	**0.0124**	**0.3087**	**0.0809**	**0.0118**	**0.0927**		**807.1799**	**807.1799**	**0.0662**	**0.1088**	**841.2554**

3.3 Site Preparation - 2022

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					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0542	0.0364	0.5924	1.7500e-003	0.2012	1.0900e-003	0.2023	0.0534	1.0000e-003	0.0544		178.3944	178.3944	4.1700e-003	3.9800e-003	179.6856
Total	**0.0542**	**0.0364**	**0.5924**	**1.7500e-003**	**0.2012**	**1.0900e-003**	**0.2023**	**0.0534**	**1.0000e-003**	**0.0544**		**178.3944**	**178.3944**	**4.1700e-003**	**3.9800e-003**	**179.6856**

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					7.2829	0.0000	7.2829	3.7430	0.0000	3.7430			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**7.2829**	**1.6126**	**8.8955**	**3.7430**	**1.4836**	**5.2265**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0542	0.0364	0.5924	1.7500e-003	0.1750	1.0900e-003	0.1761	0.0469	1.0000e-003	0.0479		178.3944	178.3944	4.1700e-003	3.9800e-003	179.6856
Total	**0.0542**	**0.0364**	**0.5924**	**1.7500e-003**	**0.1750**	**1.0900e-003**	**0.1761**	**0.0469**	**1.0000e-003**	**0.0479**		**178.3944**	**178.3944**	**4.1700e-003**	**3.9800e-003**	**179.6856**

3.4 Grading - 2022

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					9.2084	0.0000	9.2084	3.6545	0.0000	3.6545			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2084**	**1.6349**	**10.8433**	**3.6545**	**1.5041**	**5.1586**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	0.0216	0.8296	0.2330	3.1800e-003	0.0929	6.2800e-003	0.0992	0.0255	6.0100e-003	0.0315		360.2628	360.2628	0.0343	0.0577	378.3162
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
Worker	0.0602	0.0404	0.6582	1.9500e-003	0.2236	1.2100e-003	0.2248	0.0593	1.1100e-003	0.0604		198.2160	198.2160	4.6300e-003	4.4300e-003	199.6506
Total	**0.0818**	**0.8700**	**0.8912**	**5.1300e-003**	**0.3165**	**7.4900e-003**	**0.3240**	**0.0847**	**7.1200e-003**	**0.0919**		**558.4788**	**558.4788**	**0.0390**	**0.0621**	**577.9668**

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					3.4117	0.0000	3.4117	1.3540	0.0000	1.3540			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.4117**	**1.6349**	**5.0466**	**1.3540**	**1.5041**	**2.8581**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

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	0.0216	0.8296	0.2330	3.1800e-003	0.0824	6.2800e-003	0.0886	0.0229	6.0100e-003	0.0289		360.2628	360.2628	0.0343	0.0577	378.3162
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
Worker	0.0602	0.0404	0.6582	1.9500e-003	0.1944	1.2100e-003	0.1956	0.0521	1.1100e-003	0.0532		198.2160	198.2160	4.6300e-003	4.4300e-003	199.6506
Total	**0.0818**	**0.8700**	**0.8912**	**5.1300e-003**	**0.2768**	**7.4900e-003**	**0.2843**	**0.0750**	**7.1200e-003**	**0.0821**		**558.4788**	**558.4788**	**0.0390**	**0.0621**	**577.9668**

3.5 Building Construction - 2022

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0599	1.6153	0.5736	6.8200e-003	0.2302	0.0157	0.2459	0.0663	0.0150	0.0813		746.4873	746.4873	0.0428	0.1070	779.4361
Worker	0.5747	0.3861	6.2857	0.0186	2.1349	0.0115	2.1465	0.5662	0.0106	0.5768		1,892.9623	1,892.9623	0.0442	0.0423	1,906.6637
Total	**0.6345**	**2.0015**	**6.8592**	**0.0254**	**2.3651**	**0.0272**	**2.3924**	**0.6324**	**0.0256**	**0.6581**		**2,639.4496**	**2,639.4496**	**0.0870**	**0.1493**	**2,686.0998**

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0599	1.6153	0.5736	6.8200e-003	0.2056	0.0157	0.2213	0.0602	0.0150	0.0752		746.4873	746.4873	0.0428	0.1070	779.4361
Worker	0.5747	0.3861	6.2857	0.0186	1.8565	0.0115	1.8680	0.4979	0.0106	0.5085		1,892.9623	1,892.9623	0.0442	0.0423	1,906.6637
Total	**0.6345**	**2.0015**	**6.8592**	**0.0254**	**2.0621**	**0.0272**	**2.0893**	**0.5581**	**0.0256**	**0.5837**		**2,639.4496**	**2,639.4496**	**0.0870**	**0.1493**	**2,686.0998**

3.5 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0364	1.2617	0.5231	6.4700e-003	0.2302	6.4700e-003	0.2367	0.0663	6.1900e-003	0.0724		710.8178	710.8178	0.0423	0.1020	742.2684
Worker	0.5382	0.3443	5.8485	0.0180	2.1349	0.0109	2.1459	0.5662	0.0101	0.5762		1,843.7431	1,843.7431	0.0400	0.0393	1,856.4664
Total	**0.5745**	**1.6060**	**6.3716**	**0.0245**	**2.3651**	**0.0174**	**2.3825**	**0.6324**	**0.0162**	**0.6487**		**2,554.5609**	**2,554.5609**	**0.0823**	**0.1413**	**2,598.7347**

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0364	1.2617	0.5231	6.4700e-003	0.2056	6.4700e-003	0.2120	0.0602	6.1900e-003	0.0664		710.8178	710.8178	0.0423	0.1020	742.2684
Worker	0.5382	0.3443	5.8485	0.0180	1.8565	0.0109	1.8674	0.4979	0.0101	0.5079		1,843.7431	1,843.7431	0.0400	0.0393	1,856.4664
Total	**0.5745**	**1.6060**	**6.3716**	**0.0245**	**2.0621**	**0.0174**	**2.0795**	**0.5581**	**0.0162**	**0.5743**		**2,554.5609**	**2,554.5609**	**0.0823**	**0.1413**	**2,598.7347**

3.5 Building Construction - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0358	1.2580	0.5192	6.3600e-003	0.2302	6.7700e-003	0.2370	0.0663	6.4800e-003	0.0727		699.7909	699.7909	0.0427	0.1008	730.9079
Worker	0.5059	0.3094	5.4513	0.0174	2.1349	0.0104	2.1453	0.5662	9.5600e-003	0.5758		1,799.3883	1,799.3883	0.0363	0.0368	1,811.2589
Total	**0.5418**	**1.5673**	**5.9705**	**0.0238**	**2.3651**	**0.0172**	**2.3823**	**0.6324**	**0.0160**	**0.6485**		**2,499.1792**	**2,499.1792**	**0.0790**	**0.1376**	**2,542.1668**

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0358	1.2580	0.5192	6.3600e-003	0.2056	6.7700e-003	0.2123	0.0602	6.4800e-003	0.0667		699.7909	699.7909	0.0427	0.1008	730.9079
Worker	0.5059	0.3094	5.4513	0.0174	1.8565	0.0104	1.8669	0.4979	9.5600e-003	0.5074		1,799.3883	1,799.3883	0.0363	0.0368	1,811.2589
Total	**0.5418**	**1.5673**	**5.9705**	**0.0238**	**2.0621**	**0.0172**	**2.0792**	**0.5581**	**0.0160**	**0.5741**		**2,499.1792**	**2,499.1792**	**0.0790**	**0.1376**	**2,542.1668**

3.5 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.2518	0.5171	6.2300e-003	0.2302	6.8100e-003	0.2370	0.0663	6.5200e-003	0.0728		686.6901	686.6901	0.0433	0.0994	717.3830
Worker	0.4778	0.2804	5.1278	0.0169	2.1349	9.9500e-003	2.1449	0.5662	9.1600e-003	0.5754		1,755.3873	1,755.3873	0.0330	0.0346	1,766.5253
Total	**0.5131**	**1.5321**	**5.6450**	**0.0231**	**2.3651**	**0.0168**	**2.3819**	**0.6324**	**0.0157**	**0.6481**		**2,442.0774**	**2,442.0774**	**0.0762**	**0.1340**	**2,483.9082**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.2518	0.5171	6.2300e-003	0.2056	6.8100e-003	0.2124	0.0602	6.5200e-003	0.0667		686.6901	686.6901	0.0433	0.0994	717.3830
Worker	0.4778	0.2804	5.1278	0.0169	1.8565	9.9500e-003	1.8665	0.4979	9.1600e-003	0.5070		1,755.3873	1,755.3873	0.0330	0.0346	1,766.5253
Total	**0.5131**	**1.5321**	**5.6450**	**0.0231**	**2.0621**	**0.0168**	**2.0788**	**0.5581**	**0.0157**	**0.5737**		**2,442.0774**	**2,442.0774**	**0.0762**	**0.1340**	**2,483.9082**

3.6 Paving - 2025

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0495					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9646**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0375	0.0220	0.4027	1.3200e-003	0.1677	7.8000e-004	0.1685	0.0445	7.2000e-004	0.0452		137.8576	137.8576	2.5900e-003	2.7200e-003	138.7324
Total	**0.0375**	**0.0220**	**0.4027**	**1.3200e-003**	**0.1677**	**7.8000e-004**	**0.1685**	**0.0445**	**7.2000e-004**	**0.0452**		**137.8576**	**137.8576**	**2.5900e-003**	**2.7200e-003**	**138.7324**

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0495					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9646**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0375	0.0220	0.4027	1.3200e-003	0.1458	7.8000e-004	0.1466	0.0391	7.2000e-004	0.0398		137.8576	137.8576	2.5900e-003	2.7200e-003	138.7324
Total	**0.0375**	**0.0220**	**0.4027**	**1.3200e-003**	**0.1458**	**7.8000e-004**	**0.1466**	**0.0391**	**7.2000e-004**	**0.0398**		**137.8576**	**137.8576**	**2.5900e-003**	**2.7200e-003**	**138.7324**

3.7 Architectural Coating - 2025

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	31.8336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**32.0045**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0951	0.0558	1.0202	3.3500e-003	0.4248	1.9800e-003	0.4267	0.1127	1.8200e-003	0.1145		349.2394	349.2394	6.5600e-003	6.8900e-003	351.4553
Total	**0.0951**	**0.0558**	**1.0202**	**3.3500e-003**	**0.4248**	**1.9800e-003**	**0.4267**	**0.1127**	**1.8200e-003**	**0.1145**		**349.2394**	**349.2394**	**6.5600e-003**	**6.8900e-003**	**351.4553**

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	31.8336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**32.0045**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0951	0.0558	1.0202	3.3500e-003	0.3694	1.9800e-003	0.3713	0.0991	1.8200e-003	0.1009		349.2394	349.2394	6.5600e-003	6.8900e-003	351.4553
Total	**0.0951**	**0.0558**	**1.0202**	**3.3500e-003**	**0.3694**	**1.9800e-003**	**0.3713**	**0.0991**	**1.8200e-003**	**0.1009**		**349.2394**	**349.2394**	**6.5600e-003**	**6.8900e-003**	**351.4553**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.5522	5.7635	56.9456	0.1344	14.2562	0.0901	14.3463	3.7999	0.0838	3.8836		13,827.7957	13,827.7957	0.7898	0.5331	14,006.3991
Unmitigated	5.5522	5.7635	56.9456	0.1344	14.2562	0.0901	14.3463	3.7999	0.0838	3.8836		13,827.7957	13,827.7957	0.7898	0.5331	14,006.3991

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	1,980.00	1,980.00	1980.00	6,765,961	6,765,961
Parking Lot	0.00	0.00	0.00		
Total	1,980.00	1,980.00	1,980.00	6,765,961	6,765,961

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	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
City Park	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942
Condo/Townhouse	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Parking Lot	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942

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	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
NaturalGas Unmitigated	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
City Park	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
Condo/Townhouse	9948.48	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Parking Lot	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
Total		**0.1073**	**0.9168**	**0.3901**	**5.8500e-003**		**0.0741**	**0.0741**		**0.0741**	**0.0741**		**1,170.4099**	**1,170.4099**	**0.0224**	**0.0215**	**1,177.3651**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

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					
City Park	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
Condo/Townhouse	9.94848	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Parking Lot	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
Total		**0.1073**	**0.9168**	**0.3901**	**5.8500e-003**		**0.0741**	**0.0741**		**0.0741**	**0.0741**		**1,170.4099**	**1,170.4099**	**0.0224**	**0.0215**	**1,177.3651**

6.0 Area Detail

6.1 Mitigation Measures Area

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387
Unmitigated	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387

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	0.6977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.0237					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.3630	3.1020	1.3200	0.0198		0.2508	0.2508		0.2508	0.2508	0.0000	3,960.0000	3,960.0000	0.0759	0.0726	3,983.5323
Landscaping	0.5485	0.2094	18.1715	9.6000e-004		0.1005	0.1005		0.1005	0.1005		32.7183	32.7183	0.0315		33.5064
Total	**9.6330**	**3.3114**	**19.4915**	**0.0208**		**0.3513**	**0.3513**		**0.3513**	**0.3513**	**0.0000**	**3,992.7183**	**3,992.7183**	**0.1074**	**0.0726**	**4,017.0387**

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	0.6977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.0237					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.3630	3.1020	1.3200	0.0198		0.2508	0.2508		0.2508	0.2508	0.0000	3,960.0000	3,960.0000	0.0759	0.0726	3,983.5323
Landscaping	0.5485	0.2094	18.1715	9.6000e-004		0.1005	0.1005		0.1005	0.1005		32.7183	32.7183	0.0315		33.5064
Total	**9.6330**	**3.3114**	**19.4915**	**0.0208**		**0.3513**	**0.3513**		**0.3513**	**0.3513**	**0.0000**	**3,992.7183**	**3,992.7183**	**0.1074**	**0.0726**	**4,017.0387**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

UCI Area 12 Faculty/Staff Housing (CalEEMod)

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	168.00	Space	1.51	67,200.00	0
City Park	0.22	Acre	0.22	9,583.20	0
Condo/Townhouse	220.00	Dwelling Unit	9.27	404,012.00	629

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - per site plan

Construction Phase - anticipated construction schedule

Demolition -

Grading -

Vehicle Trips - Per Traffic Study

Woodstoves - No woodfire places per SCAQMD rule

Construction Off-road Equipment Mitigation - SCAQMD Rule compliance

Water Mitigation -

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	15
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	50.00
tblConstructionPhase	NumDays	10.00	50.00
tblConstructionPhase	NumDays	30.00	70.00
tblConstructionPhase	NumDays	300.00	600.00
tblConstructionPhase	NumDays	20.00	80.00
tblConstructionPhase	NumDays	20.00	80.00
tblFireplaces	NumberWood	11.00	0.00
tblGrading	MaterialExported	0.00	2,982.00
tblLandUse	LandUseSquareFeet	220,000.00	404,012.00
tblLandUse	LotAcreage	13.75	9.27
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	8.14	9.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	6.28	9.00
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	7.32	9.00
tblWoodstoves	NumberCatalytic	11.00	0.00
tblWoodstoves	NumberNoncatalytic	11.00	0.00

2.0 Emissions Summary

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7114	39.7501	29.8904	0.0671	19.8582	1.6424	21.4719	10.1558	1.5112	11.6404	0.0000	6,560.4714	6,560.4714	1.9833	0.1521	6,628.6559
2023	2.1960	16.0809	22.2320	0.0506	2.3651	0.7172	3.0823	0.6324	0.6747	1.3071	0.0000	5,022.6620	5,022.6620	0.6910	0.1441	5,082.8717
2024	2.0609	15.0976	21.7862	0.0499	2.3651	0.6305	2.9956	0.6324	0.5930	1.2254	0.0000	4,970.0350	4,970.0350	0.6842	0.1402	5,028.9170
2025	33.1149	14.0852	21.4031	0.0493	2.3651	0.5444	2.9095	0.6324	0.5120	1.1444	0.0000	4,915.9830	4,915.9830	0.7385	0.1364	4,973.5768
Maximum	**33.1149**	**39.7501**	**29.8904**	**0.0671**	**19.8582**	**1.6424**	**21.4719**	**10.1558**	**1.5112**	**11.6404**	**0.0000**	**6,560.4714**	**6,560.4714**	**1.9833**	**0.1521**	**6,628.6559**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7114	39.7501	29.8904	0.0671	7.4579	1.6424	9.0715	3.7899	1.5112	5.2745	0.0000	6,560.4714	6,560.4714	1.9833	0.1521	6,628.6559
2023	2.1960	16.0809	22.2320	0.0506	2.0621	0.7172	2.7792	0.5581	0.6747	1.2328	0.0000	5,022.6620	5,022.6620	0.6910	0.1441	5,082.8717
2024	2.0609	15.0976	21.7862	0.0499	2.0621	0.6305	2.6926	0.5581	0.5930	1.1510	0.0000	4,970.0350	4,970.0350	0.6842	0.1402	5,028.9170
2025	33.1149	14.0852	21.4031	0.0493	2.0621	0.5444	2.6064	0.5581	0.5120	1.0700	0.0000	4,915.9830	4,915.9830	0.7385	0.1364	4,973.5768
Maximum	**33.1149**	**39.7501**	**29.8904**	**0.0671**	**7.4579**	**1.6424**	**9.0715**	**3.7899**	**1.5112**	**5.2745**	**0.0000**	**6,560.4714**	**6,560.4714**	**1.9833**	**0.1521**	**6,628.6559**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.38**	**0.00**	**43.70**	**54.67**	**0.00**	**43.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387
Energy	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Mobile	5.5211	6.1929	56.1367	0.1293	14.2562	0.0902	14.3464	3.7999	0.0838	3.8836		13,297.2628	13,297.2628	0.8149	0.5557	13,483.2238
Total	**15.2614**	**10.4211**	**76.0184**	**0.1559**	**14.2562**	**0.5156**	**14.7718**	**3.7999**	**0.5093**	**4.3091**	**0.0000**	**18,460.3911**	**18,460.3911**	**0.9447**	**0.6497**	**18,677.6276**

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	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387
Energy	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Mobile	5.5211	6.1929	56.1367	0.1293	14.2562	0.0902	14.3464	3.7999	0.0838	3.8836		13,297.2628	13,297.2628	0.8149	0.5557	13,483.2238
Total	**15.2614**	**10.4211**	**76.0184**	**0.1559**	**14.2562**	**0.5156**	**14.7718**	**3.7999**	**0.5093**	**4.3091**	**0.0000**	**18,460.3911**	**18,460.3911**	**0.9447**	**0.6497**	**18,677.6276**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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

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	2/1/2022	4/11/2022	5	50	
2	Site Preparation	Site Preparation	4/12/2022	6/20/2022	5	50	
3	Grading	Grading	6/21/2022	9/26/2022	5	70	
4	Building Construction	Building Construction	9/27/2022	1/13/2025	5	600	
5	Paving	Paving	1/14/2025	5/5/2025	5	80	
6	Architectural Coating	Architectural Coating	5/1/2025	8/20/2025	5	80	

Acres of Grading (Site Preparation Phase): 75

Acres of Grading (Grading Phase): 210

Acres of Paving: 1.51

Residential Indoor: 818,124; Residential Outdoor: 272,708; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,032 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	487.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	373.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	191.00	36.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	38.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

3.2 Demolition - 2022

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					2.1065	0.0000	2.1065	0.3190	0.0000	0.3190			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**2.1065**	**1.2427**	**3.3492**	**0.3190**	**1.1553**	**1.4742**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	0.0385	1.5760	0.4322	5.8100e-003	0.1699	0.0115	0.1814	0.0465	0.0110	0.0575		658.6744	658.6744	0.0627	0.1055	691.6807
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
Worker	0.0492	0.0333	0.4594	1.3900e-003	0.1677	9.0000e-004	0.1686	0.0445	8.3000e-004	0.0453		141.5344	141.5344	3.5500e-003	3.5300e-003	142.6759
Total	**0.0877**	**1.6093**	**0.8916**	**7.2000e-003**	**0.3375**	**0.0124**	**0.3499**	**0.0910**	**0.0118**	**0.1028**		**800.2087**	**800.2087**	**0.0663**	**0.1090**	**834.3566**

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					0.7805	0.0000	0.7805	0.1182	0.0000	0.1182			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.7805**	**1.2427**	**2.0231**	**0.1182**	**1.1553**	**1.2734**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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	0.0385	1.5760	0.4322	5.8100e-003	0.1506	0.0115	0.1621	0.0418	0.0110	0.0528		658.6744	658.6744	0.0627	0.1055	691.6807
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
Worker	0.0492	0.0333	0.4594	1.3900e-003	0.1458	9.0000e-004	0.1467	0.0391	8.3000e-004	0.0399		141.5344	141.5344	3.5500e-003	3.5300e-003	142.6759
Total	**0.0877**	**1.6093**	**0.8916**	**7.2000e-003**	**0.2964**	**0.0124**	**0.3088**	**0.0809**	**0.0118**	**0.0927**		**800.2087**	**800.2087**	**0.0663**	**0.1090**	**834.3566**

3.3 Site Preparation - 2022

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					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0590	0.0400	0.5512	1.6700e-003	0.2012	1.0900e-003	0.2023	0.0534	1.0000e-003	0.0544		169.8412	169.8412	4.2600e-003	4.2400e-003	171.2111
Total	**0.0590**	**0.0400**	**0.5512**	**1.6700e-003**	**0.2012**	**1.0900e-003**	**0.2023**	**0.0534**	**1.0000e-003**	**0.0544**		**169.8412**	**169.8412**	**4.2600e-003**	**4.2400e-003**	**171.2111**

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					7.2829	0.0000	7.2829	3.7430	0.0000	3.7430			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**7.2829**	**1.6126**	**8.8955**	**3.7430**	**1.4836**	**5.2265**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0590	0.0400	0.5512	1.6700e-003	0.1750	1.0900e-003	0.1761	0.0469	1.0000e-003	0.0479		169.8412	169.8412	4.2600e-003	4.2400e-003	171.2111
Total	**0.0590**	**0.0400**	**0.5512**	**1.6700e-003**	**0.1750**	**1.0900e-003**	**0.1761**	**0.0469**	**1.0000e-003**	**0.0479**		**169.8412**	**169.8412**	**4.2600e-003**	**4.2400e-003**	**171.2111**

3.4 Grading - 2022

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					9.2084	0.0000	9.2084	3.6545	0.0000	3.6545			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2084**	**1.6349**	**10.8433**	**3.6545**	**1.5041**	**5.1586**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	0.0211	0.8622	0.2364	3.1800e-003	0.0929	6.2900e-003	0.0992	0.0255	6.0200e-003	0.0315		360.3484	360.3484	0.0343	0.0577	378.4055
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
Worker	0.0655	0.0444	0.6125	1.8600e-003	0.2236	1.2100e-003	0.2248	0.0593	1.1100e-003	0.0604		188.7125	188.7125	4.7400e-003	4.7100e-003	190.2345
Total	**0.0866**	**0.9066**	**0.8489**	**5.0400e-003**	**0.3165**	**7.5000e-003**	**0.3240**	**0.0847**	**7.1300e-003**	**0.0919**		**549.0609**	**549.0609**	**0.0391**	**0.0624**	**568.6400**

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					3.4117	0.0000	3.4117	1.3540	0.0000	1.3540			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.4117**	**1.6349**	**5.0466**	**1.3540**	**1.5041**	**2.8581**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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	0.0211	0.8622	0.2364	3.1800e-003	0.0824	6.2900e-003	0.0887	0.0229	6.0200e-003	0.0289		360.3484	360.3484	0.0343	0.0577	378.4055
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
Worker	0.0655	0.0444	0.6125	1.8600e-003	0.1944	1.2100e-003	0.1956	0.0521	1.1100e-003	0.0532		188.7125	188.7125	4.7400e-003	4.7100e-003	190.2345
Total	**0.0866**	**0.9066**	**0.8489**	**5.0400e-003**	**0.2768**	**7.5000e-003**	**0.2843**	**0.0750**	**7.1300e-003**	**0.0821**		**549.0609**	**549.0609**	**0.0391**	**0.0624**	**568.6400**

3.5 Building Construction - 2022

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0590	1.6786	0.5941	6.8200e-003	0.2302	0.0158	0.2460	0.0663	0.0151	0.0813		746.7215	746.7215	0.0427	0.1071	779.7010
Worker	0.6260	0.4241	5.8492	0.0177	2.1349	0.0115	2.1465	0.5662	0.0106	0.5768		1,802.2040	1,802.2040	0.0452	0.0450	1,816.7395
Total	**0.6850**	**2.1027**	**6.4433**	**0.0245**	**2.3651**	**0.0273**	**2.3924**	**0.6324**	**0.0257**	**0.6581**		**2,548.9255**	**2,548.9255**	**0.0879**	**0.1521**	**2,596.4405**

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	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0590	1.6786	0.5941	6.8200e-003	0.2056	0.0158	0.2213	0.0602	0.0151	0.0753		746.7215	746.7215	0.0427	0.1071	779.7010
Worker	0.6260	0.4241	5.8492	0.0177	1.8565	0.0115	1.8680	0.4979	0.0106	0.5085		1,802.2040	1,802.2040	0.0452	0.0450	1,816.7395
Total	**0.6850**	**2.1027**	**6.4433**	**0.0245**	**2.0621**	**0.0273**	**2.0894**	**0.5581**	**0.0257**	**0.5838**		**2,548.9255**	**2,548.9255**	**0.0879**	**0.1521**	**2,596.4405**

3.5 Building Construction - 2023

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0351	1.3179	0.5398	6.4800e-003	0.2302	6.5100e-003	0.2367	0.0663	6.2300e-003	0.0725		711.8632	711.8632	0.0422	0.1022	743.3801
Worker	0.5882	0.3781	5.4482	0.0172	2.1349	0.0109	2.1459	0.5662	0.0101	0.5762		1,755.5888	1,755.5888	0.0410	0.0419	1,769.0856
Total	**0.6233**	**1.6960**	**5.9880**	**0.0236**	**2.3651**	**0.0174**	**2.3826**	**0.6324**	**0.0163**	**0.6487**		**2,467.4521**	**2,467.4521**	**0.0832**	**0.1441**	**2,512.4656**

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	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0351	1.3179	0.5398	6.4800e-003	0.2056	6.5100e-003	0.2121	0.0602	6.2300e-003	0.0664		711.8632	711.8632	0.0422	0.1022	743.3801
Worker	0.5882	0.3781	5.4482	0.0172	1.8565	0.0109	1.8674	0.4979	0.0101	0.5079		1,755.5888	1,755.5888	0.0410	0.0419	1,769.0856
Total	**0.6233**	**1.6960**	**5.9880**	**0.0236**	**2.0621**	**0.0174**	**2.0795**	**0.5581**	**0.0163**	**0.5743**		**2,467.4521**	**2,467.4521**	**0.0832**	**0.1441**	**2,512.4656**

3.5 Building Construction - 2024

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0346	1.3142	0.5356	6.3700e-003	0.2302	6.8100e-003	0.2370	0.0663	6.5200e-003	0.0728		700.8456	700.8456	0.0426	0.1011	732.0274
Worker	0.5548	0.3396	5.0838	0.0166	2.1349	0.0104	2.1453	0.5662	9.5600e-003	0.5758		1,713.4905	1,713.4905	0.0372	0.0391	1,726.0819
Total	**0.5893**	**1.6538**	**5.6194**	**0.0230**	**2.3651**	**0.0172**	**2.3823**	**0.6324**	**0.0161**	**0.6485**		**2,414.3361**	**2,414.3361**	**0.0798**	**0.1402**	**2,458.1093**

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	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0346	1.3142	0.5356	6.3700e-003	0.2056	6.8100e-003	0.2124	0.0602	6.5200e-003	0.0667		700.8456	700.8456	0.0426	0.1011	732.0274
Worker	0.5548	0.3396	5.0838	0.0166	1.8565	0.0104	1.8669	0.4979	9.5600e-003	0.5074		1,713.4905	1,713.4905	0.0372	0.0391	1,726.0819
Total	**0.5893**	**1.6538**	**5.6194**	**0.0230**	**2.0621**	**0.0172**	**2.0793**	**0.5581**	**0.0161**	**0.5741**		**2,414.3361**	**2,414.3361**	**0.0798**	**0.1402**	**2,458.1093**

3.5 Building Construction - 2025

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.3078	0.5331	6.2400e-003	0.2302	6.8500e-003	0.2370	0.0663	6.5500e-003	0.0728		687.7474	687.7474	0.0431	0.0996	718.5037
Worker	0.5255	0.3077	4.7854	0.0161	2.1349	9.9500e-003	2.1449	0.5662	9.1600e-003	0.5754		1,671.7613	1,671.7613	0.0339	0.0368	1,683.5751
Total	**0.5595**	**1.6156**	**5.3185**	**0.0223**	**2.3651**	**0.0168**	**2.3819**	**0.6324**	**0.0157**	**0.6482**		**2,359.5086**	**2,359.5086**	**0.0770**	**0.1364**	**2,402.0787**

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	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0340	1.3078	0.5331	6.2400e-003	0.2056	6.8500e-003	0.2124	0.0602	6.5500e-003	0.0668		687.7474	687.7474	0.0431	0.0996	718.5037
Worker	0.5255	0.3077	4.7854	0.0161	1.8565	9.9500e-003	1.8665	0.4979	9.1600e-003	0.5070		1,671.7613	1,671.7613	0.0339	0.0368	1,683.5751
Total	**0.5595**	**1.6156**	**5.3185**	**0.0223**	**2.0621**	**0.0168**	**2.0789**	**0.5581**	**0.0157**	**0.5738**		**2,359.5086**	**2,359.5086**	**0.0770**	**0.1364**	**2,402.0787**

3.6 Paving - 2025

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850		2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0495					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9646**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**		**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0413	0.0242	0.3758	1.2600e-003	0.1677	7.8000e-004	0.1685	0.0445	7.2000e-004	0.0452		131.2902	131.2902	2.6600e-003	2.8900e-003	132.2179
Total	**0.0413**	**0.0242**	**0.3758**	**1.2600e-003**	**0.1677**	**7.8000e-004**	**0.1685**	**0.0445**	**7.2000e-004**	**0.0452**		**131.2902**	**131.2902**	**2.6600e-003**	**2.8900e-003**	**132.2179**

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	0.9152	8.5816	14.5780	0.0228		0.4185	0.4185		0.3850	0.3850	0.0000	2,206.7452	2,206.7452	0.7137		2,224.5878
Paving	0.0495					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.9646**	**8.5816**	**14.5780**	**0.0228**		**0.4185**	**0.4185**		**0.3850**	**0.3850**	**0.0000**	**2,206.7452**	**2,206.7452**	**0.7137**		**2,224.5878**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.0413	0.0242	0.3758	1.2600e-003	0.1458	7.8000e-004	0.1466	0.0391	7.2000e-004	0.0398		131.2902	131.2902	2.6600e-003	2.8900e-003	132.2179
Total	**0.0413**	**0.0242**	**0.3758**	**1.2600e-003**	**0.1458**	**7.8000e-004**	**0.1466**	**0.0391**	**7.2000e-004**	**0.0398**		**131.2902**	**131.2902**	**2.6600e-003**	**2.8900e-003**	**132.2179**

3.7 Architectural Coating - 2025

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	31.8336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**32.0045**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.1046	0.0612	0.9521	3.1900e-003	0.4248	1.9800e-003	0.4267	0.1127	1.8200e-003	0.1145		332.6017	332.6017	6.7400e-003	7.3200e-003	334.9521
Total	**0.1046**	**0.0612**	**0.9521**	**3.1900e-003**	**0.4248**	**1.9800e-003**	**0.4267**	**0.1127**	**1.8200e-003**	**0.1145**		**332.6017**	**332.6017**	**6.7400e-003**	**7.3200e-003**	**334.9521**

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	31.8336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**32.0045**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.7 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
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
Worker	0.1046	0.0612	0.9521	3.1900e-003	0.3694	1.9800e-003	0.3713	0.0991	1.8200e-003	0.1009		332.6017	332.6017	6.7400e-003	7.3200e-003	334.9521
Total	**0.1046**	**0.0612**	**0.9521**	**3.1900e-003**	**0.3694**	**1.9800e-003**	**0.3713**	**0.0991**	**1.8200e-003**	**0.1009**		**332.6017**	**332.6017**	**6.7400e-003**	**7.3200e-003**	**334.9521**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.5211	6.1929	56.1367	0.1293	14.2562	0.0902	14.3464	3.7999	0.0838	3.8836		13,297.2628	13,297.2628	0.8149	0.5557	13,483.2238
Unmitigated	5.5211	6.1929	56.1367	0.1293	14.2562	0.0902	14.3464	3.7999	0.0838	3.8836		13,297.2628	13,297.2628	0.8149	0.5557	13,483.2238

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	1,980.00	1,980.00	1980.00	6,765,961	6,765,961
Parking Lot	0.00	0.00	0.00		
Total	1,980.00	1,980.00	1,980.00	6,765,961	6,765,961

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	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
City Park	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942
Condo/Townhouse	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Parking Lot	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942

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	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
NaturalGas Unmitigated	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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					
City Park	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
Condo/Townhouse	9948.48	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Parking Lot	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
Total		**0.1073**	**0.9168**	**0.3901**	**5.8500e-003**		**0.0741**	**0.0741**		**0.0741**	**0.0741**		**1,170.4099**	**1,170.4099**	**0.0224**	**0.0215**	**1,177.3651**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

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					
City Park	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
Condo/Townhouse	9.94848	0.1073	0.9168	0.3901	5.8500e-003		0.0741	0.0741		0.0741	0.0741		1,170.4099	1,170.4099	0.0224	0.0215	1,177.3651
Parking Lot	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
Total		**0.1073**	**0.9168**	**0.3901**	**5.8500e-003**		**0.0741**	**0.0741**		**0.0741**	**0.0741**		**1,170.4099**	**1,170.4099**	**0.0224**	**0.0215**	**1,177.3651**

6.0 Area Detail

6.1 Mitigation Measures Area

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387
Unmitigated	9.6330	3.3114	19.4915	0.0208		0.3513	0.3513		0.3513	0.3513	0.0000	3,992.7183	3,992.7183	0.1074	0.0726	4,017.0387

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	0.6977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.0237					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.3630	3.1020	1.3200	0.0198		0.2508	0.2508		0.2508	0.2508	0.0000	3,960.0000	3,960.0000	0.0759	0.0726	3,983.5323
Landscaping	0.5485	0.2094	18.1715	9.6000e-004		0.1005	0.1005		0.1005	0.1005		32.7183	32.7183	0.0315		33.5064
Total	**9.6330**	**3.3114**	**19.4915**	**0.0208**		**0.3513**	**0.3513**		**0.3513**	**0.3513**	**0.0000**	**3,992.7183**	**3,992.7183**	**0.1074**	**0.0726**	**4,017.0387**

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	0.6977					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	8.0237					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.3630	3.1020	1.3200	0.0198		0.2508	0.2508		0.2508	0.2508	0.0000	3,960.0000	3,960.0000	0.0759	0.0726	3,983.5323
Landscaping	0.5485	0.2094	18.1715	9.6000e-004		0.1005	0.1005		0.1005	0.1005		32.7183	32.7183	0.0315		33.5064
Total	**9.6330**	**3.3114**	**19.4915**	**0.0208**		**0.3513**	**0.3513**		**0.3513**	**0.3513**	**0.0000**	**3,992.7183**	**3,992.7183**	**0.1074**	**0.0726**	**4,017.0387**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

Biological Resources Report

Biological Resource Assessment for the Area 12 Project

Prepared for:

Irvine Campus Housing Authority on behalf of University of California, Irvine
1083 California Avenue
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September 2021

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ACRONYMS, ABBREVIATIONS, AND GLOSSARY OF TERMS

Applicant	Irvine Campus Housing Authority on behalf of University of California, Irvine
BLM	United States Bureau of Land Management
BMPs	Best Management Practices
CAGN	coastal California gnatcatcher
CDF	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	United States Army Corps of Engineers
CRPR	California Rare Plant Rank
CSLS	Carlson Strategic Land Solutions
CWA	Clean Water Act
FESA	Federal Endangered Species Act
FGC	California Fish and Game Code
GIS	Geographic Information System
GPS	Global Positioning System
ICHA	Irvine Campus Housing Authority
LBV	least Bell's vireo
MBTA	Migratory Bird Treaty Act
MCVII	The Manual of California Vegetation
MMRP	Mitigation, Monitoring, and Reporting Program
MSL	mean sea level
NCCP/HCP	Orange County Natural Community Conservation Plan/Habitat Conservation Plan
NEPA	National Environmental Protection Act
NHD	National Hydrography Dataset
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service

NWI	National Wetlands Inventory
OHWM	Ordinary High-Water Mark
Project	Area 12 Project site
RWQCB	Regional Water Quality Control Board
SAA	Section 1600 Streambed Alteration Agreement
SWPPP	Storm Water Pollution Prevention Plan
UCI	University of California, Irvine
U.S.	United States
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WQC	Section 401 Water Quality Certification

1.0 Introduction

Carlson Strategic Land Solutions (CSLS) prepared this Biological Resource Assessment for the Irvine Campus Housing Authority (ICHA) on behalf of University of California, Irvine (UCI) at the Area 12 Site (Project Site) in the City of Irvine. The Biological Resource Assessment for the 9.8-acre Project site and the surrounding 300-feet, collectively known as the "Study Area," incorporates the findings from a biological field survey and jurisdictional delineation conducted on May 27 and May 28, 2020 (Appendix A).

1.1 Purpose and Approach

This report provides a summary of the conditions present during the May 27 and May 28, 2020, collectively referred to as the May 2020 field surveys, an assessment of the potential presence of sensitive biological resources, an analysis of the potential impacts to those resources due to Project implementation and proposed mitigation. This assessment describes the current biological resources present within the Study Area including habitat communities, jurisdictional waters, and the potential occurrence of listed and special status plant and wildlife species. The potential biological significance of site construction and development in view of federal, state, and local laws and regulations are also identified in this report. The report also recommends, as appropriate, Best Management Practices (BMPs) and avoidance and minimization measures to reduce or avoid potential impacts. While general biological resources are discussed, the focus of this assessment is on those resources considered to be sensitive. This assessment was prepared based upon results of a literature review and field surveys.

1.2 Project Terms

The following terms will be used throughout this document and are defined as follows:

- Project site: the approximately 9.8-acre Area 12 Project site.
- Study Area: the area evaluated during the field survey, including the approximately 9.8-acre Project site and an approximate 300-foot buffer area surrounding the Project site.
- Project Vicinity: intended to be a general term to describe the broader area surrounding the Study Area.

1.3 Project Location

The Study Area is located in the City of Irvine, south of East Peltason Drive, west of Los Trancos Drive at the Las Lomas Apartments (Figures 1 and 2). Areas surrounding the Study Area include the University of California, Irvine to the north; residential located to the south and east; and open/space and Orange County Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) Preserve to the west (Figure 2). The Study Area is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Tustin* Quadrangle.

Access to the Project site is from East Peltason Drive and Los Trancos Drive.

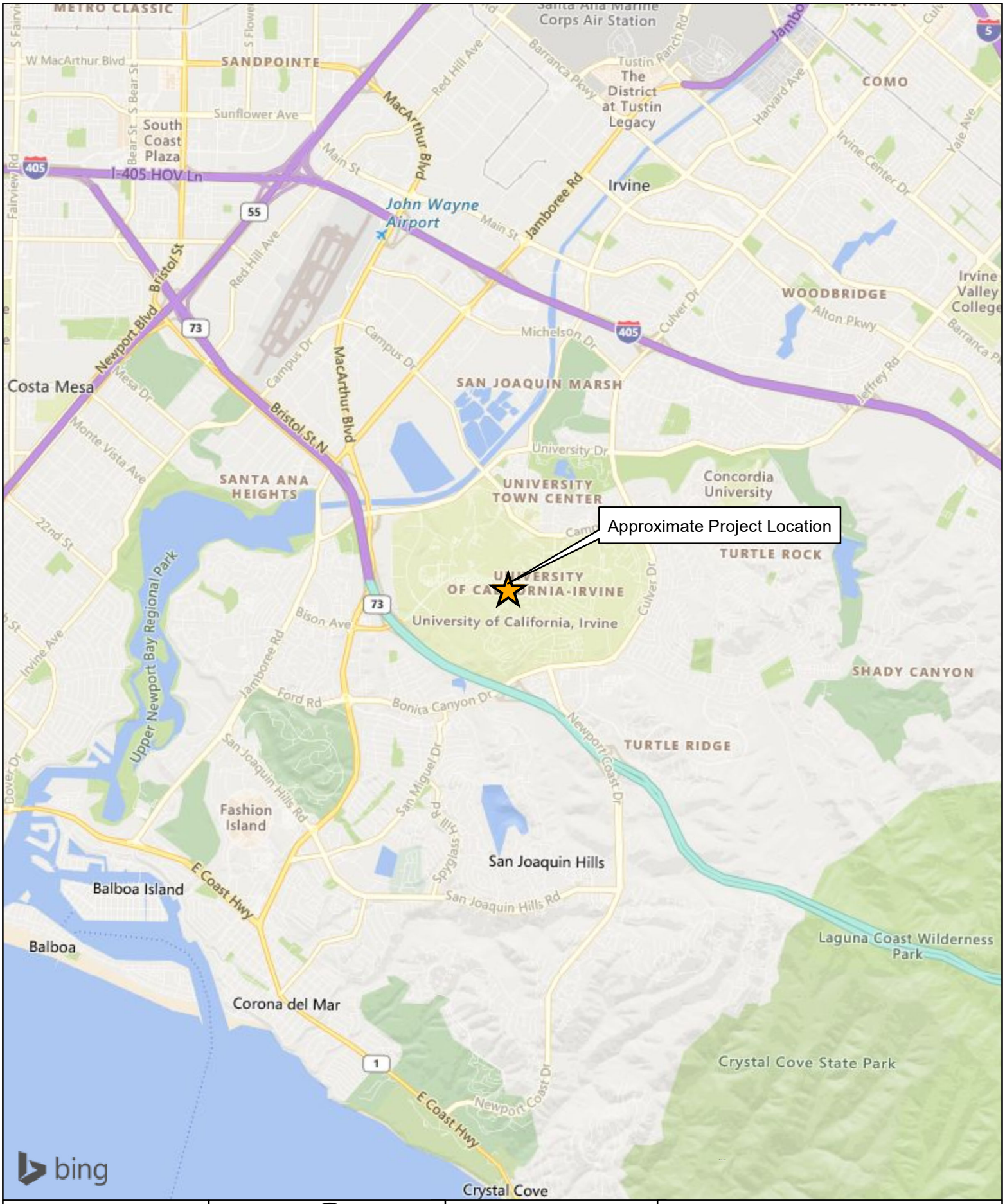
1.4 Existing Conditions

The Project site currently contains 20 Apartment buildings and associated parking lots and infrastructure. A drainage occurs to the west of the Apartment complex containing existing storm drain inlets and outlets and associated headwalls. The ephemeral feature found within the Study Area receives flows from sub-drains collecting runoff from the adjacent streets and residential developments. The drainage is heavily vegetated with eucalyptus (*Eucalyptus sp.*), however, some native species occur within the drainage, such as black willow (*Salix nigra*) and California rose (*Rosa californica*).

2.0 Project Description

The Project proposes to demolish the existing Apartment building and in its place, construct attached homes located at the existing Las Lomas Apartments. The Project would occur in two phases. The first phase, Phase 12-1 is the area located on the east side of Los Trancos Drive. The second phase, Phase 12-2 is area located on the west side of Los Trancos Drive. The Project includes demolition of the existing Apartment complex and parking lots, re-grading of the Project site, installation of new infrastructure and connecting to existing infrastructure when possible, including new storm drain outlets, and construction of the proposed attached homes for University of California, Irvine faculty. The existing water, sewer, electric, telephone and gas service mains will remain.

The Project would incorporate planned pedestrian, bicycle, and vehicular connections to campus facilities to the north and the University Hills community to the south.



GIS Prepared By:
Carlson SLS

Created: June 1, 2020

0 1,250 2,500 5,000 7,500 Feet
1 inch = 5,000 feet

Data Source: Bing Roads Map

Area 12 Project Site

Regional Location

Figure 1

GIS Prepared By:
Carlson SLS

Created: May 18, 2020

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Maps

Area 12 Project Site
Approximate Project Site

Figure 2

3.0 Regulatory Context

The following is a list of the key local, state, and federal laws and regulations that apply to protecting plant communities, plants, wildlife, and water quality from project impacts relevant to the Project.

3.1 Federal Laws and Regulations

3.1.1 Federal Endangered Species Act (FESA)

The Federal Endangered Species Act (FESA) of 1973 defines an endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range." A threatened species is 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, unless properly permitted, it is unlawful to "take" any listed species. "Take" is defined in Section 3(18) of FESA: "...harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Further, the US Fish and Wildlife Service (USFWS), through regulation, has interpreted the terms "harm" and "harass" to include certain types of habitat modification as forms of "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 which could affect a federally listed plant or animal species, the property owner and agency are required to consult with USFWS pursuant to Section 7 of the Endangered Species Act (ESA) if there is a federal nexus, or pursuant to Section 10 of the ESA. Section 9(a)(2)(b) of the FESA addresses the protections afforded to listed plants. All references to federally-protected species in this biological assessment include the most current published status or candidate category to which each species has been assigned by USFWS.

3.1.2 Migratory Bird Treaty Act (MBTA)

The Migratory Bird Treaty Act (MBTA) protects individuals as well as any part, nest, or eggs of any bird listed as migratory. In practice, Federal permits issued for activities that potentially impact migratory birds typically have conditions that require pre-disturbance surveys for nesting birds. In the event nesting is observed, a buffer area with a specified radius must be established, within which no disturbance or intrusion is allowed until the young have fledged and left the nest, or it has been determined that the nest has failed. If not otherwise specified in the permit, the size of the buffer area varies with species and local circumstances (e.g., presence of busy roads, intervening topography, etc.), and is based on the professional judgment of a monitoring biologist. A list of migratory bird species protected under the MBTA is published by USFWS.

3.1.3 Federal Clean Water Act (CWA)

The Clean Water Act (CWA), Section 401 provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters.

Section 401 requires a project operator to obtain a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The Regional Water Quality Control Board administers the certification program in California. Section 404 establishes a permit program administered by the United States Army Corps of Engineers (Corps) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The Corps implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the United States Environmental Protection Agency in conjunction with Corps (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

3.1.4 Wetlands and Other Waters of the United States

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and fall under the jurisdiction of several regulatory agencies. The Corps exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as the portion that falls within the limits of the Ordinary High-Water Mark (OHWM). The OHWM is defined as the "line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

The Study Area falls into the Special Area Management Plan (SAMP) for the San Diego Creek Watershed. The SAMP was developed by the Corps in partnership with CDFW to establish a Watershed Streambed Alteration Agreement process for the San Diego Creek Watershed. The SAMP includes a cohesive, watershed-specific plan to address anticipated permitting needs and compensatory mitigation to improve the long-term management of aquatic resources within the watershed. The underlying goal of the SAMP is to support riparian ecosystem conservation and management by comprehensively assessing the watershed's aquatic resources and developing and strategic and coordinated regulatory approach, both in permitting and mitigation. The approach to achieve the underlying goal prioritizes avoidance of impacts to higher integrity aquatic resources and envisions targeted enhancement and restoration activities related to regulatory actions that will maintain and improve the watershed's aquatic resource functions and values over the long term.

It is important to note regarding Corps Section 404 jurisdiction that on April 21, 2020, the U.S. Environmental Protection Agency (EPA) and the Corps published the Navigable Waters Protection Rule to define "Waters of the United States" in the Federal Register. The April 2020 definition includes four simple categories of jurisdictional waters, including: (1) the territorial seas and traditional navigable waters; (2) perennial and intermittent tributaries to those waters; (3) certain lakes, ponds and impoundments; and (4) wetlands adjacent to jurisdictional waters. The April 2020 definition provides clear exclusions for many water features that traditionally have been regulated, such as ephemeral drainages. While the April 2020 definition has been formally adopted by EPA and the Corps, it is going through legal challenges and could be overturned by a court. Furthermore, it is unclear whether the new definition would apply to projects within the SAMP. Given the uncertainty of the April 2020 definition and the governance of the Study Area by the SAMP, this Biological Resources Assessment relies on the prior definition of jurisdictional limits consistent with the requirements in the SAMP.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by Corps as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by Corps (USACE 1987).

It is important to note that the RWQCB definition of wetland was redefined and the new definition went into effect May 28, 2020. The definition of a wetland is as follows: An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. This RWQCB modified three-parameter definition is similar to the federal definition in that it identifies three wetland characteristics that determine the presence of a wetland: wetland hydrology, hydric soils, and hydrophytic vegetation. Unlike the federal definition, however, the RWQCB wetland definition allows for the presence of hydric substrates as a criteria for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5% cover) to be considered a wetland.

However, if any vegetation is present, then the Corps delineation procedures would apply to the vegetated component (i.e., hydrophytes must dominate). Examples of waters that would be considered wetlands by the RWQCB definition, but not by the federal wetland definition, are non-vegetated wetlands, or wetlands characterized by exposed bare substrates like mudflats and playas, as long as they met the three-

parameters as described in the RWQCB definition. It is important to note that while the Corps may not designate a feature as a wetland, that feature could be considered a special aquatic site or other water of the U.S. by the Corps and potentially subject to Corps' jurisdiction.

3.2 California State Laws and Regulations

3.2.1 California Endangered Species Act (CESA)

The California Endangered Species Act (CESA) establishes the policy of the state to conserve, protect, restore, and enhance threatened or endangered species and their habitats. The CESA mandates that state agencies should not approve projects that would jeopardize the continued existence of threatened or endangered species if reasonable and prudent alternatives are available that would avoid jeopardy. There are no state agency consultation procedures under the CESA. For projects that would affect a listed species under both the CESA and the FESA, compliance with the FESA would satisfy the CESA if California Department of Fish and Wildlife (CDFW) determines that the federal incidental take authorization is "consistent" with the CESA under California Fish and Game Code (FGC) Section 2080.1. For projects that would result in take of a species listed under the CESA only, the project operator would have to apply for a take permit under Section 2081(b).

3.2.2 California Fish and Game Code Section 1600-1616

Section 1602 of the California Fish and Game Code requires notifying CDFW prior to any project activity that might (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If, after this notification, the CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will need to be obtained. CDFW may then place conditions in the Section 1602 Streambed Alteration Agreement to avoid, minimize, and mitigate any potentially significant adverse impacts within CDFW jurisdictional limits.

3.2.3 California Fully Protected Species

California fully protected species are described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

3.2.4 California Fully Protected Species

California fully protected species are described in Sections 3511, 4700, 5050, and 5515 of the California Fish and Game Code. These statutes prohibit take or possession of fully protected species. CDFW is unable to authorize incidental take of fully protected species when activities are proposed in areas inhabited by those species.

3.2.5 Protection of Birds

Section 3503.5 of the California Fish and Game Code states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Activities that result in the abandonment of an active bird of prey nest may also be considered in violation of this code. In addition, California Fish and Game Code, Section 3511 prohibits the taking of any bird listed as fully protected, and California Fish and Game Code, Section 3515 states that is it unlawful to take any non-game migratory bird protected under the MBTA.

3.2.6 Porter-Cologne Water Quality Act – California Code, Division 7

The RWQCB also has jurisdiction over waters deemed "isolated" or not subject to Section 404 jurisdiction under the Solid Waste Agency of Northern Cook County v. Corps decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required to obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

Under Section 401 of the CWA, the local RWQCB (for this project, the Santa Ana RWQCB) must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. Compensatory mitigation for impacts to wetlands and/or waters of the state is required.

3.2.7 California Native Plant Protection Act

The California Native Plant Protection Act (California Fish and Game Code §§ 1900–1913) requires all State agencies to use their authority to carry out programs to conserve Endangered and Rare native plants. The California Native Plant Protection Act gives the CDFW the power to designate native plants as "Endangered" or "Rare" and prohibits the take of such plants with certain exceptions.

3.2.8 Sensitive Plant Communities

Sensitive plant communities include those habitat types considered sensitive by resource agencies, namely CDFW, due to their scarcity and/or their ability to support State and Federally-listed Endangered, Threatened, and Rare vascular plants, as well as several sensitive bird and reptile species. CDFW maintains a natural plant community list, the List of California Terrestrial Natural Communities. Sensitive natural communities (also referred to by CDFW as 'rare', 'special-status', or 'special concern') are identified on the list by an asterisk and are considered high priority vegetation types (CDFW 2003; CDFW 2000).

3.2.9 California Native Plant Society

The California Native Plant Society (CNPS) is a private plant conservation organization dedicated to the monitoring and protection of sensitive species in California. CNPS 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. The list serves as the candidate list for Threatened and Endangered by CDFW. CNPS has developed five categories of rarity, of which Ranks 1A, 1B, and 2 are particularly considered sensitive.

Sensitive species that occur or potentially could occur within the Study Area are based on one or more of the following: (1) the direct observation of the species within the Study Area during any field surveys; (2) a record reported in the CNDDB; and (3) the Study Area is within known distribution of a species and contains appropriate habitat.

3.2.10 Native Plant Protection Act (NPPA)

California's Native Plant Protection Act (NPPA) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants (FGC Sections 1900-1913). Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of CDFW at least 10 days in advance of any change in land use. This allows CDFW to salvage listed plant species that would otherwise be destroyed. The project operator is required to conduct botanical inventories and consult with CDFW during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

3.3 Other Regulations

3.3.1 Orange County Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP)

The Orange County Natural Community Conservation Plan and Habitat Conservation Plan (NCCP/HCP) was prepared in cooperation with the California Department of Fish and Wildlife (CDFW) and the US Fish and Wildlife Service (USFWS). The NCCP/HCP focus' on creating a multiple-species, multiple-habitat subregional Reserve System and implementing a long-term adaptive management program that will protect coastal sage scrub (CSS) and other habitats and species located within the CSS habitat mosaic, while providing for economic uses that will meet the social and economic needs of the people of the subregion.

The primary goal of the NCCP/HCP is to protect and manage habitat supporting a broad range of plant and animal populations. To accomplish this goal, the NCCP/HCP creates a subregional habitat Reserve System and implements a coordinated program to manage biological resources within the habitat reserve. Specific project purposes of the NCCP/HCP are:

- planning for the protection of multiple-species and multiple-habitats within the coastal sage scrub habitat mosaic by creating a habitat Reserve System that contains substantial coastal sage scrub, chaparral, grasslands, riparian, oak woodlands, cliff and rock, forest and other habitats;
- developing a conservation program that shifts away from the current focus on project by-project, single species protection to conservation and management of many species and multiple habitats on a subregional level;
- allowing social and economic uses within the subregion that are compatible with the protection of Identified Species and habitats;
- protecting the federally-listed coastal California gnatcatcher in a manner consistent with Section 10(a) of the FESA and the Special4(d) Rule for the gnatcatcher while providing for future Incidental Take of the species;
- protecting the other two "target species," the coastal cactus wren and orange-throated whiptail lizard, by treating them "as if they were listed" under Section 10(a) of FESA and allowing Incidental Take of these species;
- protecting non-CSS habitat within the CSS habitat mosaic at a level comparable to the protection provided for CSS, thereby contributing to the protection of a broader range of species than just the target species or CSS species;
- addressing the habitat needs of the non-target species within the subregion and the non-CSS habitats, including protecting six other federally-listed species consistent with FESA Section 10(a) and treating 30 other "identified" species "as if they were listed" under Section 10(a) of the FESA;
- addressing the conservation of sensitive species located on the Dana Point Headlands site, including the coastal California gnatcatcher, Pacific pocket mouse, other Identified Species and five designated plant species;
- building upon prior regional open space planning that has occurred in Orange County and integrating that open space planning into the creation of the habitat Reserve System and subregional conservation strategy; and
- addressing impacts to CSS and non-CSS habitats and related NCCP/HCP species addressed in the Joint EIR/EIS in a manner that will be used and relied upon in conjunction with future environmental reviews and documents.

3.4 Regulatory Permits

This report is prepared pursuant to and in support of California Environmental Quality Act (CEQA), and any applicable regulatory permit applications, including the California Department of Fish and Wildlife (CDFW) Streambed Alteration Agreement (SAA), Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification (WQC), United States Army Corps of Engineers (Corps) Section 404 permit, and United States Fish and Wildlife Service Section 7 Biological Opinion.

4.0 Survey and Methods

Preparation for this biological assessment began with a review of relevant available literature and review of historical biological documentation for the Study Area. This effort was followed by onsite field surveys to assess the existing habitat, map any onsite sensitive plant communities and jurisdictional waters, and determine whether special status plant and wildlife species occur or potentially occur within the Study Area.

4.1 Literature Review

The assessment began with a review of relevant available literature on the biological resources within the Study Area and Project Vicinity.

4.1.1 Sensitive Plant Communities

Sensitive plant communities (sensitive habitats) are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. Sensitive habitats are often threatened with local extirpation and are therefore considered valuable biological resources. Plant communities are considered "sensitive" by the California Native Plant Society (CNPS) and CDFW if they meet any of the criteria listed below.

- The habitat is recognized and considered sensitive by CDFW, USFWS, and/or special interest groups such as CNPS.
- The habitat is under the jurisdiction of the Corps pursuant to Section 404 of the CWA.
- The habitat is under the jurisdiction of the CDFW pursuant to Sections 1600 through 1612 of the California Fish and Game Code.
- The habitat is known or believed to be of high priority for inventory in the California Natural Diversity Database (CNDDB).
- The habitat is considered regionally rare.
- The habitat has undergone a large-scale reduction due to increased encroachment and development.
- The habitat supports special status plant and/or wildlife species (defined below).
- The habitat functions as an important corridor for wildlife movement.

4.1.2 Critical Habitat

Under the ESA, the federal government is required to designate "critical habitat" for any species it lists under the ESA. Federal agencies are prohibited from authorizing, funding or carrying out actions that "destroy or adversely modify" critical habitats. Section 3 of the ESA defines critical habitat as:

- The specific areas within the geographic area occupied by a species, at the time it is listed in accordance with the ESA, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection.

- The specific areas outside the geographic area occupied by a species at the time it is listed, upon a determination that such areas are essential for the conservation of the species.

"Conservation" means the use of all methods and procedures that are necessary to bring an endangered or a threatened species to the point at which listing under the ESA is no longer necessary. Critical habitat receives protection under Section 7(a)(2) of the ESA through the prohibition against destruction or adverse modification of critical habitat with regard to actions carried out, funded, or authorized by a federal agency. Section 7(a)(2) also requires conferences on federal actions that are likely to result in the destruction or adverse modification of proposed critical habitat.

The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Study Area is within any species' designated Critical Habitat (USFWS 2020a). The USFWS regulatory mapping process for the designation of critical habitat is broad-based mapping exercise of areas that may or may not include constituent elements of the critical habitat designation. Due to this approach in mapping, large areas are designated as critical habitat regardless of the existing habitat, and as a result may include developed areas, such as buildings, roads, hardscape, and other such facilities, as well as natural habitats.

The constituent elements of the critical habitat designation consider the physical and biological features needed for life processes and successful reproduction of the listed species, including:

- Space for individual and population growth for normal behavior;
- Habitat cover or shelter;
- Food, water, or other nutritional or physiological requirements;
- Sites for breeding and rearing offspring; and
- Habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

4.1.3 Special Status Plants and Wildlife

Species of plants and animals are afforded "special status" by federal agencies, state agencies, and/or non-governmental organizations because of their recognized rarity, potential vulnerability to extinction, and local importance. These species typically have a limited geographic range and/or limited habitat and are referred to collectively as "special status" species. Plant and wildlife species are considered "special status" species if they meet any of the following criteria.

- Taxa with official status under ESA, CESA, and/or the NPPA.
- Taxa proposed for listing under ESA and/or CESA.

- Taxa designated a species of special concern by CDFW.
- Taxa designated a state fully protected species by CDFW.
- Taxa identified as sensitive, unique or rare, by the USFWS, CDFW, the United States Forest Service (USFS), the United States Bureau of Land Management (BLM), and/or the California Department of Forestry and Fire Protection (CDF).
- Plants that meet the definition of rare or endangered under CEQA §15380(b) and (d). Species that may meet the definition of rare or endangered include the following:
    - Species considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank [CRPR] 1A, 1B and 2) (CNPS 2020). A majority of the CRPR 3 and CRPR 4 plant species generally do not qualify for protection under CESA and NPPA.
    - Species that may warrant consideration on the basis of local significance or recent biological information.
    - Some species included on the CNDDB Special Plants, Bryophytes, and Lichens List (CDFW 2020g).
- Considered a locally significant species, that is, a species that is not rare from a statewide perspective but is rare or uncommon in a local context such as within a county or region (CEQA §15125 (c)) or is so designated in local or regional plans, policies, or ordinances (CEQA Guidelines, Appendix G). Examples include a species at the outer limits of its known range or a species occurring on an uncommon soil type.

Available literature and databases were reviewed regarding sensitive habitats and special status plant and wildlife species. Special status plant and wildlife species that have the potential to occur within the immediate region of the Study Area were identified. Several agencies, including the USFWS, CDFW, and CNPS publish lists of particular taxa (species and subspecies) and the associated level of protection or concern associated with each. Reviewed and consulted literature and databases focused on the Study Area, and included the following sources listed below:

- The CNDDB, a CDFW species account database that inventories status and locations of rare plants and wildlife in California, was used to identify any sensitive plant communities and special status plants and wildlife that may exist within a two-mile radius of the Project site. A CNDDB search was performed by assessing a two-mile radius around the Study Area (CDFW 2020f). CNDDB records are generally used as a starting point when determining what special status species, if any, may occur in a particular area. However, these records may be old, lack data not yet entered, and do not represent all the special status species that could be in that particular area (Figure 3).
- A map of USFWS critical habitat to determine species with critical habitat mapped in the general vicinity of the Project (Figure 4) (USFWS 2020a).
- Online CNPS Inventory of Rare and Endangered Plants of California (CNPS 2020). A search for the USGS 7.5-Minute Topographic Map *Tustin* and the surrounding

seven quadrangles (*Anaheim, Orange, Black Star Canyon, Newport Beach, El Toro, Laguna Beach, and San Juan Capistrano*) provided information regarding the distribution and habitats of special status vascular plants in the Project Vicinity.
- Pertinent maps, scientific literature, websites, and regional flora and fauna field guides.

The literature review was used as a resource to better understand the biological resources potentially occurring within the Study Area. Although the inventory list of special status plant and wildlife species was not exhaustive of all species that might occur on the property, it provides a wide range of species that are representative of the wildland habitats in the area. Species occurrence and distribution information is based on documented occurrences where surveys have taken place for individual projects; therefore, a lack of documented occurrence does not necessarily indicate that a given species is absent from the Study Area.

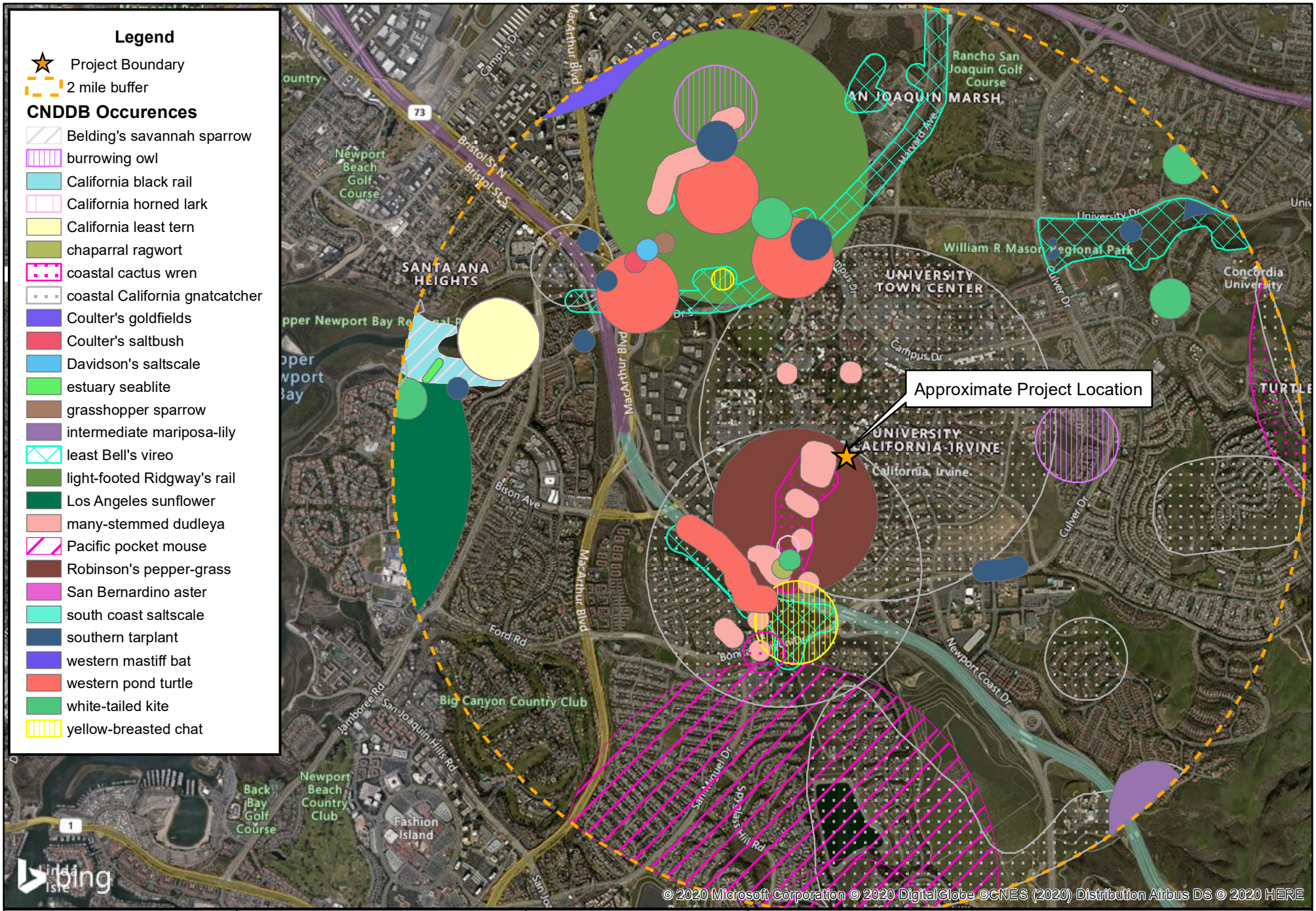
4.1.4 Jurisdictional Waters

The following sources were reviewed to determine the potential presence or absence of jurisdictional streams/drainages, wetlands, and their location within the watersheds associated with the Study Area, and other features that might contribute to federal or state jurisdictional authority located within watersheds associated with the Study Area:

- National Wetlands Inventory (NWI) maps (USFWS 2020c). The NWI database indicates potential wetland areas based on changes in vegetation patterns as observed from satellite imagery. This database is used as a preliminary indicator of wetland habitats because the satellite data are not precise.
- Title 33 Code of Federal Register (CFR): Navigation and Navigable Waters Part 328
- USGS National Hydrography Dataset (NHD). Provides the locations of "blue-line" streams as mapped on 7.5-Minute Topographic Map coverage.
- Aerial Imagery (Google Earth©) (Google 2020).
- USGS 7.5-Minute Topographic Maps.
- Natural Resource Conservation Service (NRCS) Soil Survey.

4.1.5 Orange County Natural Community Conservation Plan/Habitat Conservation Plan

The UCI campus, including the Project site, is located in the NCCP/HCP Coastal Subregion. A NCCP/HCP Reserve is located within the UCI Campus, specifically located directly west of the Project site. The Project site is not located within a sensitive area or preserve designated area (Figure 5).



GIS Prepared By:
Carlson SLS

Created: May 26, 2020

0 1,500 3,000 6,000 Feet

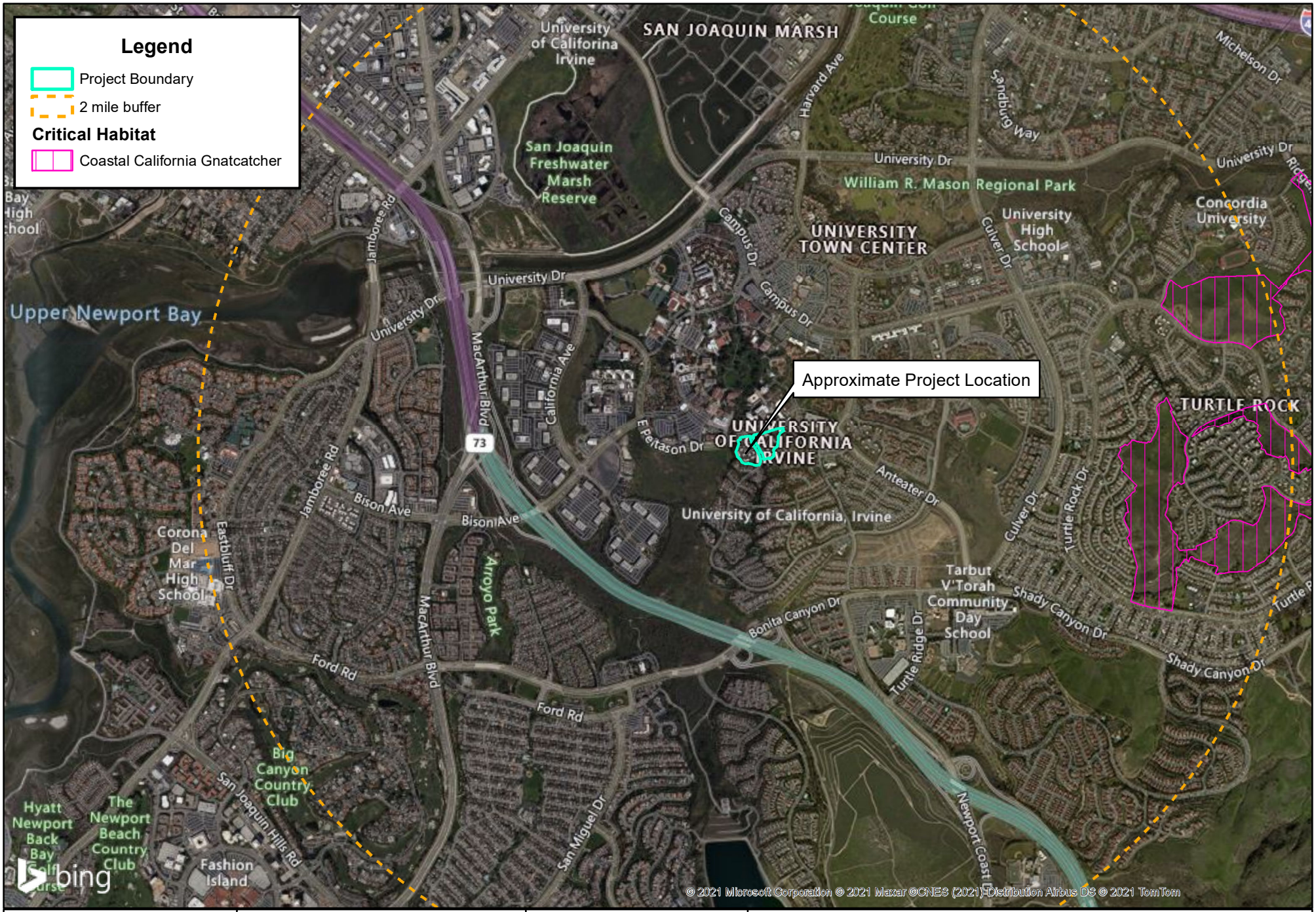
1 inch = 3,000 feet

Data Source: Bing Maps
CNDDB (09/2019)

Area 12 Project Site

CNDDB Occurrences Results

Figure 4



GIS Prepared By:
Carlson SLS

Created: May 26, 2020

0 500 1,000 2,000 3,000 4,000 Feet
1 inch = 2,500 feet

Data Source: Bing Maps
CH (03/2015)

Area 12 Project Site
Critical Habitat Results

Figure 4

GIS Prepared By:
Carlson SLS

Created: May 29, 2020

0 175 350 700 1,050 1,400 Feet
1 inch = 750 feet

Data Source: Bing Maps
Orange County NCCP/HCP

Area 12 Project Site
Orange County Central Coastal NCCP/HCP

Figure 5

4.2 Biological Survey

4.2.1 General Biological Survey

Field surveys were performed on May 27, 2020 and May 28, 2020, collectively referred to as May 2020 surveys, by CSLS biologists Brianna Bernard and Crysta Dickson to assess and map vegetation communities, plants, and wildlife, and to identify habitat areas that could be suitable for special status plant species.

Plant species were identified using plant field and taxonomical guides, such as The Jepson Manual: Vascular Plants of California, second edition (Baldwin et al. 2012). Vegetation communities were characterized utilizing vegetation alliances in accordance with The Manual of California Vegetation, Second Edition (MCVII) (Sawyer et al. 2009). Where necessary, deviations were made on best professional judgment when areas did not fit into a specific habitat description provided by MCVII. Plant communities were mapped in the field directly onto a 200-scale (1" = 200') aerial photograph and a Trimble R1 GNSS Receiver paired with the ARC Geographical Information System (ARCGIS) Collector Application was utilized during the survey. All plant species encountered during the field survey were identified and recorded in field notes. Information regarding the presence of suitable habitat and soils to support the species, known records or occurrence within the area, and known distribution and elevation range obtained from the relevant literature was used to determine presence or absence of sensitive species.

The biologists paid special attention to those habitat areas that had the potential to provide suitable habitat for special status plant and wildlife species. Aerial photographs and maps were used to assist in the delineation of plant community boundaries. Following field mapping, the plant communities were digitized, and the vegetation map was created.

General wildlife surveys were conducted on foot and with binoculars within the Study Area. All wildlife species encountered visually or audibly during the field survey were identified and recorded in field notes. Biologists also recorded signs of wildlife species including animal tracks, burrows, nests, scat, and remains. Binoculars were used to aid in the identification of observed wildlife. Wildlife field guides and photographs were used to assist with identification of wildlife species during the field survey, as necessary. Photographs were taken to document existing conditions within the Study Area (Appendix B).

4.2.2 Regional Connectivity/Wildlife Movement

Wildlife corridors link together areas of suitable habitat that are otherwise separated by 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 to adjoining open space areas, various studies have concluded that some wildlife species, especially the larger and more

mobile mammals, would not likely persist over time in fragmented or isolated habitat areas because they prohibit the infusion of new individuals and genetic information (MacArthur and Wilson 1967, Soule 1987, Harris and Gallager 1989). Corridors effectively act as links between different populations of a species. A group of smaller populations (termed "demes") linked together via a system of corridors is termed a "meta-population." The long-term health of each deme within the meta-population is dependent upon its size and the frequency of interchange of individuals (immigration versus emigration). The smaller the deme, the more important immigration becomes, because prolonged inbreeding with the same individuals can reduce genetic variability. Immigrant individuals that move into the deme from adjoining demes mate with individuals and supply that deme with new genes and gene combinations that increases overall genetic diversity. An increase in a population's genetic variability is generally associated with an increase in a population's health.

Corridors mitigate the effects of habitat fragmentation by:

- Allowing animals to move between remaining habitats, which allows depleted populations to be replenished and promotes genetic diversity.
- Providing escape routes from fire, predators, and human disturbances, thus reducing the risk that catastrophic events (such as fires or disease) will result in population or local species extinction.
- Serving as travel routes for individual animals as they move within their home ranges in search of food, water, mates, and other needs (Fahrig and Merriam 1985, Simberloff and Cox 1987, Harris and Gallagher 1989).

Wildlife movement activities usually fall into one of three movement categories:

- Dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions).
- Seasonal migration.
- Movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover).

A number of terms have been used in various wildlife movement studies, such as "wildlife corridor," "travel route," "habitat linkage," and "wildlife crossing" to refer to areas in which wildlife moves from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this study, these terms are defined as follows:

- Travel route: a landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to

another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relatively direct link between target habitat areas.

- Wildlife corridor: a piece of habitat, usually linear in nature, that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-level corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

- Wildlife crossing: a small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings are typically manmade and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor.

4.3 Jurisdictional Delineation

An assessment of the Study Area for the presence of jurisdictional features was conducted by CSLS biologists Brianna Bernard and Crysta Dickson on May 28, 2020. All depressions and drainages were evaluated for the presence of jurisdictional waters and wetlands according to the Corps, RWQCB, and CDFW delineation guidelines, including connectivity or lack of connectivity to Traditional Navigable Waters. Dominant vegetation within and adjacent to the jurisdictional features within the Study Area was identified and recorded.

The Corps and the RWQCB have jurisdiction over Waters of the United States. Jurisdictional non-wetland features for the Waters of the United States are typically determined through the observation of an Ordinary High Water Mark (OHWM), which is defined as the "line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Projects with impacts to Waters of the United States are regulated under Sections 401 and 404 of the Clean Water Act. Currently, the April 2020 Waters of the United States definition is going through legal challenges, therefore for purposes of this report the jurisdictional limits are based on the prior definition, which is based on the existing ordinary high-water mark and includes ephemeral waters.

To determine the presence of a jurisdictional wetland for the Waters of the United States, three indicators are required: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. The methodology published in the *United States Army Corps of Engineers 1987 Wetland Delineation Manual* and the *Arid West Supplement* sets the

standards for meeting each of the three indicators, which normally require more than 50 percent cover of dominant plant species typical of a wetland, soils exhibiting characteristics of saturation, and hydrological indicators be present.

CDFW has jurisdiction over water of the Department's interest (California Fish and Game Code §§1600 et seq.; California Code of Regulations, Title 14, §720), referred to as Waters of the State. Section 1602 of the California Fish and Game Code (FGC) applies to all rivers, streams, lakes and streambeds. CDFW defines a stream as "a body of water that flows perennially or episodically and that is defined by the area in which water currently flows, or has flowed, over a given course during the historic hydrologic course regime, and where the width of its course can reasonably be identified by physical or biological indicators" (Brady and Vyverberg 2013). Likewise, CDFW regulates jurisdictional areas of riparian habitat only to the extent that those areas are part of a stream, river, or lake as defined above. Waters of the State pertaining to Porter-Cologne in relation to RWQCB jurisdiction are defined by California Water Code Section 13050(e) as any surface or ground water within the boundaries of the state.

Prior to the field investigation, CSLS biologist reviewed historical aerial imagery and topography for the Study Area to determine the potential for perennial, intermittent, or ephemeral drainages and associated riparian resources. Generally, indicators of jurisdictional drainages on an aerial photo include vegetation and/or incised lines indicating the path of flowing water. Following the desktop research, CSLS biologists conducted an onsite field investigation. Based on the collective results of the desktop investigation and the field surveys, any observed jurisdictional features were mapped using the following parameters:

- The limits of the Corps' jurisdiction extend to the OHWM. OHWM indicators include: the observation of benches, break in bank slope, particle size distribution, sediment deposits, drift, litter, and/or change in plant community.
- The RWQCB shares the Corps' jurisdictional methodology, and the Regional Board's May 2020 wetland definition.
- CDFW's jurisdiction applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the state. CDFW's authority also includes riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, CDFW jurisdiction is mapped to the top of bank of the stream or the extent of streambed dependent vegetation.

5.0 Results

5.1 Vegetation Communities

The vegetation communities and habitat conditions were inspected to confirm presence and habitat quality of the vegetation found onsite. Vegetation mapping and acreages for each vegetation community is based on the observations of the field surveys, which are listed below in Table 1 and graphically depicted on Figure 6. Representative photographs of the vegetation communities can be found in Appendix B.

The deviations from MCVII alliance categories include ornamental and developed communities. The deviations were made due to the lack of alliances for these communities within MCVII. The field survey included the Project site and surrounding 300-foot buffer around the Project site to determine what vegetation types exist. As shown on Figure 6, the surrounding 300-foot buffer consists primarily of developed vegetation community, however, grasslands and coastal sage scrub habitat occur directly to the west of the Project site, specifically within the NCCP/HCP preserve area.

Table 1. Vegetation Community Observed within the Study Area

Vegetation Community	Acreage within the Study Area (acres)
California Rose Shrubland Alliance	0.05
Toyon Shrubland Alliance	0.20
California buckwheat scrub Shrubland Alliance[1]	0.75
Non-Native Grasslands – Bromus Herbaceous Alliance	3.69
Eucalyptus Woodland Alliance	0.73
Ornamental	6.05
Developed	29.43
TOTAL	40.9
1. California Buckwheat scrub shrubland alliance occurs only within the surrounding 300-foot buffer.	

The general description of the habitat observed during the May 2020 field surveys are described below.

GIS Prepared By:
Carlson SLS

Created: June 1, 2020

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Maps
Field Survey 5/27/2020
Field Survey 5/28/2020

Area 12 Project Site

Vegetation Mapping

Figure 6

5.1.1 California Rose Shrubland Alliance

The California Rose Shrubland Alliance is composed entirely of California rose (*Rosa californica*). The understory is bare ground. This alliance is found in the drainage, located west of the existing Apartment complex.

5.1.2 Toyon Shrubland Alliance

A total of 0.20 acres of the Study Area consists of toyon (*Heteromeles arbutifolia*). Per the field survey, it appears the toyon was planted intentionally to provide screening for the existing Apartment complex. The alliance consists primarily of toyon scattered with eucalyptus trees (*Eucalyptus sp.*) and pine trees (*Pinus sp.*).

5.1.3 California Buckwheat Shrubland Alliance

This alliance occurs only within a portion of the 300-foot buffer area and is not located on the Project site. Specifically, this alliance occurs to the west of the Project site within the NCCP/HCP preserve area. The alliance consists primarily of California buckwheat (*Eriogonum fasciculatum*) and California Sagescrub (*Artemisia californica*) scattered with scattered coastal prickly pear (*Opuntia littoralis*), coyote brush (*Baccharis pilularis*), California brittlebush (*Encelia californica*), white sage (*Salvia apiana*), laurel sumac (*Malosma laurina*), clustered tarweed (*Deinandra fasciculata*), star thistle (*Centaurea solstitialis*), and shortpod mustard (*Hirschfeldia incana*).

5.1.4 Non-Native Grasslands – Bromus Herbaceous Alliance

Approximately 0.42 acres of non-native grassland are present in the western portion of the site and are composed mainly of foxtail barley (*Hordeum murinum*), ripgut brome (*Bromus diandrus*), and common wild oat (*Avena fatua*). Other species within the vegetation community includes artichoke thistle (*Cynara cardunculus*), small fescue (*Festuca microstachys),* star thistle (*Centaurea solstitialis*), bristly ox tongue (*Picris echioides*), foxtail chess (*Bromus madritensis*), and shortpod mustard (*Hirschfeldia incana*).

5.1.5 Eucalyptus Woodland Alliance

Approximately 0.73 acres of eucalyptus woodland alliance is present on the site and is composed mainly of eucalyptus trees. This vegetation community is associated with the drainage located directly to the west of the existing Apartment complex. Per the MCVII membership rules, the vegetation community must include Eucalyptus species greater than 80% relative cover in the tree layer to be considered a Eucalyptus Woodland Alliance. The eucalyptus canopy within the drainage meets and exceeds the MCVII membership rule with over 85% cover in the tree layer. The Eucalyptus Woodland Alliance includes scattered Mexican palm trees (*Washingtonia robusta*), pine trees (*Pinus sp.*), toyon, common fig (*Ficus carica*), jade plant (*Crassula ovata*), Brazilian pepper (*Schinus terebinthifolia*), lemonade berry (*Rhus integrifolia*), two scrub oak (Quercus berberidifolia), a single western sycamore (*Plantus racemosa*), and black willow (*Salix nigra*), which is located on the upstream and the downstream end of the drainage. The understory consists of mainly of bare ground with tree debris and leaf

litter. The understory has scattered brome, mugwort (*Artemisia douglasiana*), tarragon (*Artemisia dracunculus*), Italian thistle (*Carduus pycnocephalus*), tocolote (*Centaurea melitensis*), shortpod mustard, shortleaf spikesedge (*kyllinga brevifolia*), scarlet pimpernel (*lysimachia arvensis*), and yerba mansa (*Anemopsis californica*), which is located on the downstream end of the drainage.

5.1.6 Ornamental

The ornamental habitat type is dominated by pine trees (*Pinus sp.*), eucalyptus trees (*Eucalyptus sp.*), English ivy (*Hedera helix*), blue plumbago (*Plumbago auriculata*), jade plant, and scattered toyon. The ornamental vegetation is nonnative, and some of it is considered invasive. The ornamental vegetation provides limited habitat value. Ornamental landscaping or buildings are generally known to provide habitat for special-status bat species. The ornamental species found onsite do not provide deep crevices which function as a roosting site for sensitive bat species.

5.1.7 Developed

The developed areas are not vegetated and consists of existing structures, asphalt parking lots, concrete paths, and ornamental grass consisting primarily Kentucky bluegrass (*Poa pratensis)*. Planted adjacent to the walkways, courtyards, and buildings is the ornamental sycamore species, London Planetree (*Platanus ×hispanica*). The developed community contains limited habitat value and includes non-native or invasive species. The buildings found onsite do not provide deep crevices which function as a roosting site for sensitive bat species.

5.2 Special-Status Vegetation Types

A CNDDB search within the Tustin USGS topographic quadrangle and the surrounding seven quadrangles found ten special-status vegetation communities designated by CDFW. The special status vegetation communities include Southern Sycamore Alder Riparian Woodland, Southern Interior Cypress Forest, Southern Riparian Scrub, California Walnut Woodland, Riversidian Alluvial Fan Sage Scrub, Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Dune Scrub, Southern Riparian Scrub, and Southern Willow Scrub. The Study Area does not contain any of the listed special-status vegetation types.

5.3 Plants

Sensitive plants include those listed, or candidates for listing, by the USFWS and CDFW; and species considered sensitive by the CNPS (particularly Lists 1A, 1B, and 2). Several sensitive plant species were reported in the vicinity of the Study Area based on the CNDDB, within the 8-quadrangle search. A total of thirteen sensitive plant species occur within the USGS 7.5′ Tustin quadrangle and a brief description of the species is included below. Special status plant species with the potential to occur on the Study Area were analyzed based on distribution, habitat requirements, and existing site conditions (Appendix C). All plant species observed within the Study Area during the field surveys on May 27 and May 28, 2020 are listed in Appendix D.

Coulter's saltbush (*Atriplex coulteri*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Orange, Riverside, Ventura, San Diego, Anacapa Island, Santa Barbara, San Clemente Island, Santa Cruz Island, San Luis Obispo, San Miguel Island, San Nicolas Island, and Santa Rose Island Counties.
Habitat(s): Alkaline or Clay soils supporting coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland habitats. Known from 3 to 460 meters (9 to 1,500 feet) MSL. Blooms March through October.
Status onsite: None. While the site contains non-native grasslands, the site lacks suitable soils. Not observed during field surveys.

South Coast saltscale (*Atriplex pacifica*)
Status: California Rare Plant Rank 1B.2
Distribution: Anacapa Island, Los Angeles, Orange, Santa Barbara, San Clemente Island, Santa Catalina Island, Santa Cruz Island, San Diego, San Nicolas Island, Santa Rosa Island, and Ventura Counties.
Habitat(s): Habitats supporting coastal bluff scrub, coastal dunes, coastal scrub, and playas. Known from 0 to 140 meters (0 to 460 feet) MSL. Blooms March through October.
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

Davidson's saltscale (*Atriplex serenana var. davidsonii*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Orange, Riverside, Santa Barbara, Santa Catalina Island, Santa Cruz Island, San Diego, San Luis Obispo, Santa Rosa Island, and Ventura Counties.
Habitat(s): Alkaline soils supporting coastal bluff scrub and coastal scrub. Known from 10 to 200 meters (32 to 660 feet) MSL. Blooms April through October.
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

Intermediate mariposa lily (*Calochortus weedii var. intermedius*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Orange, Riverside, and San Bernardino Counties.
Habitat(s): Rocky and calcareous soils supporting chaparral, valley and foothill grassland and coastal scrub. Known from 105 to 855 meters (344 to 2,800 feet) MSL. Blooms May through July.
Status onsite: None. While the site contains minimal non-native grasslands, the site lacks suitable soils. Not observed during field surveys.

Southern tarplant (*Centromadia parryi ssp. australis*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Orange, Santa Barbara, Santa Catalina Island, San Diego and Ventura Counties.

Habitat(s): Habitats supporting marshes and swamps (margins), valley and foothill grasslands (vernally mesic), and vernal pools. Known from 0 to 480 meters (0 to 1,575 feet) MSL. Blooms May through November.
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

Many-stemmed dudleya (*Dudleya multicaulis*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Orange, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Often clay soils supporting chaparral, coastal scrub, and valley and foothill grassland. Known from 15 to 790 meters (50 to 2,600 feet) MSL. Blooms April through July.
Status onsite: None. The site lacks suitable habitat and soils. Not observed during field surveys.

Coulter's goldfields (*Lasthenia glabrata ssp. coulteri*)
Status: California Rare Plant Rank 1B.1
Distribution: Colusa, Kern, Los Angeles, Merced, Orange, Santa Barbara, San Bernardino, San Diego, San Luis Obispo, Solano, Santa Rose Island, Tehama, Ventura, and Yolo Counties.
Habitat(s): Habitats include marshes and swamps (coastal salt), playas, and vernal pools. Known from 1 to 1,220 meters (3 to 4,000 feet) MSL. Blooms February through June.
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

Mud nama (*Nama stenocarpa*)
Status: California Rare Plant Rank 2B.2
Distribution: Imperial, Kings, Los Angeles, Orange, Riverside, San Clemente Island, and San Diego Counties.
Habitat(s): Habitats include marshes and swamps (lake margins, riverbanks). Known from 5 to 500 meters (16 to 1,600 feet) MSL. Blooms January through July.
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

Gambel's water cress (*Nasturtium gambelii*)
Status: Federally endangered, State threatened, and California Rare Plant Rank 1B.1
Distribution: Los Angeles, Orange, Santa Barbara, San Luis Obispo and San Diego Counties.
Habitat(s): Habitats include marshes and swamps (fresh water or brackish). Known from 5 to 330 meters (16 to 1,000 feet) MSL. Blooms April through October.
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

Chaparral ragwort (*Senecio aphanactis*)
Status: California Rare Plant Rank 2B.2
Distribution: Alameda, Contra Costa, Fresno, Los Angeles, Merced, Monterey, Orange, Riverside, Santa Barbara, San Bernardino, San Benito, Santa Clara, Santa Cruz, Santa

Catalina Island, Santa Cruz Island, San Diego, San Francisco, San Luis Obispo, San Mateo, Solano, Santa Rose Island, Tulare, and Ventura Counties.
Habitat(s): Sometimes alkaline soils supporting chaparral, cismontane woodland and coastal scrub. Known from 15 to 800 meters (50 to 2,600 feet) MSL. Blooms January through April (May).
Status onsite: None. The site lacks suitable habitats and soils. Not observed during field surveys.

Salt spring checkerbloom (*Sidalcea neomexicana*)
Status: California Rare Plant Rank 2B.2
Distribution: Kern, Los Angeles, Orange, Riverside, San Bernardino, Ventura, and San Diego Counties.
Habitat(s): Alkaline or mesic soils supporting chaparral, coastal scrub, lower montane coniferous forest, mojavean desert scrub, or playas. Known from 15 to 1,530 meters (50 to 5,000 feet) MSL. Blooms March through June.
Status onsite: None. The site lacks suitable habitats and soils. Not observed during field surveys.

Estuary seablite (*suaeda esteroa*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Orange, Santa Barbara, San Diego, and Ventura Counties.
Habitat(s): Marshes and swamps (coastal salt). Known from 0 to 5 meters (0 to 16 feet) MSL. Blooms (May)July through October (January).
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

San Bernardino aster (*Symphyotrichum defolatum*)
Status: California Rare Plant Rank 1B.2
Distribution: Los Angeles, Riverside, San Bernardino, and San Diego Counties.
Habitat(s): Near ditches, streams, and springs and associated habitats including Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic). Known from 2 to 2,040 meters (7 to 6,700 feet) MSL. Blooms July through November (December).
Status onsite: None. The site lacks suitable habitats. Not observed during field surveys.

As determined through the field surveys conducted in May 2020 field surveys, no special status plant species were observed within the Project site and the potential for special status plant species to occur on the Project site is very low because the majority of the Project site is developed and the undeveloped areas lack suitable habitats and soils to support the special status plant species.

5.4 Critical Habitat

The USFWS's online service for information regarding Threatened and Endangered Species Final Critical Habitat designation within California was reviewed to determine if the Project site is within any species' designated Critical Habitat. The Project site and

surrounding buffer area is not located within any designated Critical Habitat overlay. The closest designated Critical Habitat is located approximately 1.35 miles east of the Project site for the coastal California gnatcatcher (*Polioptila californica californica* [CAGN]) (Figure 4).

5.5 Wildlife

Special status wildlife species with the potential to occur within the Study Area were analyzed based on the species identified in USGS 7.5' Tustin quadrangle, distribution, habitat requirements, and existing site conditions (Appendix E). No special status wildlife was identified or observed within the Project site during the May 2020 field surveys. However, 21 sensitive wildlife species were determined to have the potential to occur on the Project site. The 21 species include the following species: tricolor blackbird (*Agelaius tricolor*), grasshopper sparrow (*Ammodramus savannarum*), burrowing owl (*Athene cunicularia*), coastal cactus wren (*Campylorhynchus brunneicapillus*), Mexican long-tongued bat (*Choeronycteris mexicana*), western yellow-bellied cuckoo (*Coccyzus americanus occidentalis*), yellow rail (*Coturnicops noveboracensis*), western pond turtle (*Emys marmorata*), western mastiff bat (*Eumops perotis californicus*), yellow-breasted chat (*Icteria virens*), California black rail (*Laterallus jamaicensis coturniculus*), Belding's savannah sparrow (*Passerculus sandwichensis beldingi*), Pacific pocket mouse (*Perognathus longimembris pacificus*), light-footed Ridgway's rail (*Rallus obsoletus levipes*), California least tern (*Sternula antillarum browni*), California horned lark (*Eremophila alpestris actia*), coastal California gnatcatcher, coast horned lizard (*Phrynosoma blainvillii*), least Bell's vireo (*Vireo bellii pusillus*), red-diamond rattlesnake (*Crotalus ruber*), and western spadefoot (*Spea hammondii*). A brief description of those species and their habitat is included below.

Tricolor blackbird (*Agelaius tricolor*)
Status: State threatened
Habitat(s): Colonies require nearby water, a suitable nesting substrate, and open-range foraging habitat composed of grassland, woodland, or agricultural cropland.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Grasshopper sparrow (*Ammodramus savannarum*)
Status: CDFW species of special concern
Habitat(s): Grasshopper sparrows in California breed (and primarily apparently winter) on slopes and mesas containing grasslands of varying compositions. The grasshopper sparrow generally prefers moderately open grasslands and prairies with patchy bare ground. They also appear to use abandoned croplands that are dominated by grassy species. The species frequents dense, dry or well-drained grassland, especially native grassland with a mix of grasses and forbs for foraging and nesting and concealment. They require fairly continuous native grassland areas with occasional taller stems for breeding areas. They tend to avoid grassland areas with extensive shrub cover and the presence of native grasses is less important than the absence of trees.

Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Burrowing owl (*Athene cunicularia)*
Status: CDFW species of special concern
Habitat(s): Burrowing owls are a year-round resident of California including habitats of open, dry grassland and desert. They are generally restricted to mostly flat, open country with suitable nest sites. They use rodent or other burrows for roosting and nesting cover and acquire their burrows from either abandonment or eviction. Burrowing owls typically hunt from a perch.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Coastal cactus wren (*Campylorhynchus brunneicapillus)*
Status: CDFW species of special concern
Habitat(s): Occurs almost exclusively in cactus (cholla and prickly pear) dominated coastal sage scrub.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Mexican long-tongued bat (*Choeronycteris mexicana*)
Status: CDFW species of special concern
Habitat(s): The Mexican long-tongued bat preferred habitats include desert and montane riparian, desert succulent shrub, desert scrub, and pinyon-juniper habitats. Roosts in crevices, mines and bridges.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Western yellow-bellied cuckoo (*Coccyzus americanus occidentalis*)
Status: Federally threatened and State endangered
Habitat(s): This species is an uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in California. Formerly much more common and widespread throughout lowland California. Roosts and nests in densely foliaged, deciduous trees and shrubs in extensive thickets, particularly willows.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

White-tailed kite (*Elanus leucurus*)
Status: California Fully-Protected Species
Habitat(s): This species prefers cismontane woodland, marsh and swamp, riparian woodland, valley and foothill grassland, and wetland habitats.
Status onsite: High. White-tailed kite are highly adapted to urbanized areas and tolerant of human activity. Suitable nesting habitat and suitable roosting sites are identified within the eucalyptus woodland area found on and adjacent to the Project site and in the Western Sycamore (*Platanus racemosa*) found among developed areas. Foraging habitat is present adjacent to the site in an existing habitat reserve due to the presence of open land located to the west of the Project site. No sightings of this species occurred during the field surveys for this report; however, several pairs of white-tailed kites are known to occur on the UCI campus and surrounding area. Historically, a pair of white-

tailed kites have been observed by local Sea and Sage Audubon birders and UCI Biologist nesting in the eucalyptus trees located offsite to the south of the Project site behind the homes off Blake Court adjacent to the NCCP/HCP Reserve area. Furthermore, white-tailed kite have been reported by UCI biologists to have nested on the Project site in 2021 within a western sycamore tree within the developed area.

Yellow rail (*Coturnicops noveboracensis*)
Status: CDFW species of special concern
Habitat(s): Yellow Rails occur in shallow marshes with fairly short vegetation. For breeding, taller emergent vegetation like cattails does not attract Yellow Rails, but they sometimes nest nearby, where water is shallower and vegetation shorter. They often nest among sedges and bulrushes. Because water levels change frequently in the prairies, nesting locations are not consistent in some areas from year to year. Migrating Yellow Rails turn up in wet meadows, shallow marshes, and agricultural fields with grassy cover or heavy stubble. Wintering Yellow Rails use shallow wetlands as they do in breeding areas, typically dominated by sedges, rushes, bulrushes, and grasses.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Western pond turtle (*Emys marmorata*)
Status: CDFW species of special concern
Habitat(s): Inhabits permanent or nearly permanent water below 1,830 meters (6000 feet) throughout California, west of the Sierra Cascade.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Western mastiff bat (*Eumops perotis californicus*)
Status: CDFW species of special concern
Habitat(s): Western mastiff bats are found in a variety of habitats, such as semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban, but the species' distribution may be geomorphically determined, occurring primarily where there are significant rock features offering suitable roosting habitat. A cliff dwelling species, where maternity colonies of 30 to several hundred roost generally under exfoliating rock slabs and rock crevices along cliffs. Western mastiff bats can also be found in similar crevices in large boulders and buildings. When roosting in rock crevices they require a sizable drop from their roost in order to achieve flight. Western mastiff bats prefer deep crevices that are at least 15 or 20 feet above the ground. Foraging is concentrated around bodies of water but also includes coastal sage scrub, chaparral, and grassland habitats.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Yellow-breasted chat (*Icteria virens*)
Status: CDFW species of special concern
Habitat(s): In southern California they are primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-

developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. Breeding habitat must be dense to provide shade and concealment. It winters south to Central America.
Status onsite: Low Potential to occur onsite. Suitable habitat exists onsite within the California rose stand. Not observed during the field surveys.

California black rail (*Laterallus jamaicensis coturniculus*)
Status: State threatened
Habitat(s): Black Rails nest in marshes and wet meadows across North America, including riparian marshes, coastal prairies, saltmarshes, and impounded wetlands. All of the habitats have stable shallow water. Nests are primarily made of southern cattail or spikerush and are elevated above the mud substrate in clumps of vegetation. Black rails have also been known to nest on top of a mat of dead vegetation from the previous years' growth.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Belding's savannah sparrow (*Passerculus sandwichensis beldingi*)
Status: State endangered
Habitat(s): A year-long resident within coastal salt marshes of southern California. Belding's are ecologically associated with dense pickleweed, particularly *Salicornia virginica*, within which most nests are found. Breeding territories can be very small and they nest in midsize colonies or may be locally concentrated within a larger block of habitat, all of which may appear generally suitable. They can be difficult to count accurately since they are secretive and forage throughout a marsh, often well away from nesting sites.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Pacific pocket mouse (*Perognathus longimembris pacificus*)
Status: Federally endangered and CDFW species of special concern
Habitat(s): Pacific pocket mouse is a small, burrowing rodent that primarily feeds on seeds and is associated with fine grain, sandy substrates in coastal strand, coastal dunes, river alluvium and coastal sage scrub habitats within approximately 2.5 miles of the ocean in southern California.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Light-footed Ridgway's rail (*Rallus obsoletus levipes*)
Status: Federally and State endangered
Habitat(s): The light-footed Ridgway's rail uses southern California coastal salt marshes, lagoons, and their maritime environs. This species nests in the lower littoral zone of coastal salt marshes where dense stands of cordgrass are present. They require shallow water and mudflats for foraging, with adjacent higher vegetation for cover during high water.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

California least tern (*Sternula antillarum browni*)
Status: Federally and State threatened
Habitat(s): California least terns live along the coast. They nest on open beaches kept free of vegetation by the tide. The typical colony size is 25 pair.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

California Horned Lark (*Eremophila alpestris actia*)
Status: CDFW watch list
Habitat(s): A year-long resident within the state and within a variety of open habitats, usually where trees and large shrubs are absent. They are not particular about the nature of the field, so long as it has very little vegetation. Range-wide, they breed in level or gently sloping short grass prairies, montane meadows, "bald" hills, open coastal plains, fallow grain fields, alkali flats, and rangelands. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities provide cover.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Coastal California gnatcatcher (*Polioptila californica californica*)
Status: federally threatened, CDFW species of special concern
Distribution: Southern Los Angeles, Orange, western Riverside, and San Diego counties south into Baja.
Habitat(s): Coastal sage scrub of varying subtypes, sometimes riparian, chaparral, and other habitats as well.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Coast horned lizard (*Phrynosoma blainvillii*)
Status: CDFW species of special concern
Habitat(s): Occurs in a variety of vegetation types including coastal sage scrub, chaparral, annual grassland, oak woodland and riparian woodlands.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Least Bell's Vireo (*Vireo bellii pusillus*)
Status: federally endangered, state endangered
Habitat(s): This species primarily occupies riverine riparian habitats that typically feature dense cover within 1-2 m of the ground and a dense, stratified canopy. Typically, it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses.
Status onsite: None. The drainage consists of large, dense eucalyptus trees with sparse shrub layer and sparse herbaceous layer, lacking dense willow or mulefat which is required for nesting for this species. The three black willows located at the outlet and inlet of the system exhibit some level of stress and do not provide sufficient density or stratified canopy required for the species. The overall drainage system is not suitable

for the species, which inhabits dense riparian habitats. Furthermore, biological surveys were conducted in late May, during the height of the least Bell's vireo breeding season, and no species were observed or heard. Therefore, since the site lacks suitable habitat and the species was not observed or heard during field surveys, it was determined the species does not occur on the Study Area or have the potential to occur onsite.

Red-Diamond Rattlesnake (*Crotalus ruber*)
Status: species of special concern
Habitat(s): It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake, however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats. They need rodent burrows, cracks in rocks or surface cover objects.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Western Spadefoot (*Spea hammondii*)
Status: CDFW species of special concern
Habitat(s): May be found in coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, but is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas. Within these habitats, they require rain pools/vernal pools in which to reproduce and that persist with more than three weeks of standing water in which to metamorphose successfully. They can also breed in slow-moving streams (e.g., areas flooded by intermittent streams). Water breeding sites must lack fish, bullfrogs, and crayfish in order for to successfully reproduce and metamorphose.
Status onsite: None. The site lacks suitable habitat. Not observed during field surveys.

Summary of Sensitive Wildlife Species
No special status wildlife species or evidence of their presence were observed or heard during the May 2020 field surveys. Given the Project site's built nature and lack of suitable habitat there is no opportunity for 20 of the 22 sensitive wildlife species to occur within the Project site.

The yellow-breasted chat has limited potential to occur on the Project site, specifically in the California rose patch found within onsite drainage. The Yellow-Breasted Chat requires tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. The species nests are typically associated with streams, swampy ground, and the borders of small ponds. The drainage consists of large dense eucalyptus trees with sparse shrub layer and sparse herbaceous layer, lacking dense willow thickets or well-developed understories required for the species. The California rose patch that occurs within the drainage

provides limited habitat for the Yellow-Breasted Chat, however, the drainage onsite lacks wide riparian woodlands with developed understory, swampy grounds or streams in which to nest. While the California rose patch found onsite may provide limited suitable habitat, it also lacks swampy ground or stream required for nesting.

Furthermore, biological surveys were conducted in late May 2020 field surveys, during the height of the avian breeding season and the species was not heard or observed during field surveys. Given the absence of suitable habitat and the species, it was determined the species does not occur on the Project site.

The white-tailed kite has a high potential to occur on the Project site, specifically within the eucalyptus woodland area found onsite and adjacent to the property and within native and non-native trees used as ornamental landscaping. Additionally, the open field located within the existing habitat preserve to the west of the Project site serves as potential foraging habitat. While the species tends to favor dense canopies used for nesting and cover, the eucalyptus woodland area and ornamental trees provide suitable habitat for the species. Furthermore, the species is adapted to urban settings and would not be deterred to human activity. The species is known to occur within the University of Irvine campus and surround areas. During the biological surveys conducted in late May 2020, during the height of the avian breeding season, the species was not heard or observed. However, observations of nesting within a Western Sycamore tree within the developed area on the Project site have been made outside of a formal study by UCI biologists.

5.5.1 Wildlife Species Observed or Detected

The animal species or signs thereof observed during the CSLS surveys are listed below:

Birds:

- Common Raven (*Corvus corax*)
- Common yellowthroat (*Geothlypis trichas*)
- American crow (*Corvus brachyrhynchos*)
- Lesser goldfinch (*Spinus psaltria*)
- White-throated swift (*Aeronautes saxatalis*)
- Hooded oriole (*Icterus cucullatus*)
- House wren (*Troglodytes aedon*)
- Rufous hummingbird (*Selasphorus rufus*)
- Cooper's hawk (*Accipiter cooperii*)
- Acorn woodpecker (*Melanerpes formicivorus*)
- Bushtit (*Psaltriparus minimus*)
- Spotted towhee (*Pipilo maculatus*)
- Anna's hummingbird (*Calypte anna*)
- Hutton's vireo (*Vireo huttoni*)
- black phoebe (*Sayornis nigricans*)

- California towhee (*Melozone crissalis*)
- house finch (*Haemorhous mexicanus*)
- mourning dove (*Zenaida macroura*)
- red-tailed hawk (*Buteo jamaicensis*)
- song sparrow (*Melospiza melodia*)
- turkey vulture (*Cathartes aura*)

Mammals:

- California ground squirrel (*Spermophilus beecheyi*)
- desert cottontail (*Sylvilagus audubonii*)

Reptiles:

- western fence lizard (*Sceloporus occidentalis*)

5.6 Regional Connectivity/Wildlife Movement

The Study Area supports limited habitat in the form of ornamental trees and is does not support regional wildlife movement. Further, the site is constrained to the north, east and south by University of California Irvine campus and residential development which further constrains potential regional wildlife movement through the site. The Study Area is not identified within the NCCP/HCP as a regional corridor.

Although regional movement through this area is likely limited, there is some potential for smaller or "local" movement through the Study Area for more urbanized species. Movement on a smaller scale could occur within the site for species that are less restricted in movement pathway requirements or are adapted to urban areas [e.g., raccoon (*Procyon lotor*), and avian species in general). Habitat within the Study Area is dominated by developed Apartment complex and ornamental trees with a large eucalyptus grove associated with the drainage to the west. As such, it may support some wildlife movement within the site and/or nearby areas for foraging and shelter. The home range and average dispersal distance of many of these species may be entirely contained within the site and immediate vicinity.

Bird species may fly over the development to utilize the site for foraging, although this is expected to be limited due to the high level of human activity in the region. In summary, the site may support live-in and movement habitat for species on a local scale. Due to development surrounding the site, the site likely provides little to no function to facilitate movement for wildlife species on a regional scale and it is not identified within the NCCP/HCP as a regionally corridor.

5.7 Jurisdictional Areas

5.7.1 Summary of Jurisdictional Waters

A single drainage occurs to the west of the Apartment complex containing existing stormdrain inlets and outlets and associated headwalls. The ephemeral feature receives flows from sub-drains collecting runoff from the adjacent streets and residential developments. The drainage is heavily vegetated with Eucalyptus Woodland Alliance and to a lesser degree California Rose Shrubland Alliance.

The Eucalyptus Woodland Alliance is composed mainly of eucalyptus trees with 85% of eucalyptus tree cover. The Eucalyptus Woodland Alliance includes scattered Mexican palm trees, pine trees, toyon, common fig, jade plant, Brazilian pepper, lemonade berry, two scrub oaks, a single western sycamore, and black willow, which is located on the upstream and the downstream end of the drainage. The understory consists mainly of bare ground with fallen tree debris and eucalyptus and pine leaf litter. The understory has scattered brome, mugwort, Italian thistle, tocolote, shortpod mustard, shortleaf spikesedge, scarlet pimpernel, and yerba mansa, which is located on the downstream end of the drainage.

The California Rose Shrubland Alliance found within the drainage is composed entirely of California rose. The understory is bare ground.

5.7.2 Waters of the United States

This section relies on the term "Waters of the United States" as it applies to the jurisdictional limits under the authority of the Army Corps of Engineers[1] under the Clean Water Act and applies to the jurisdiction of the Regional Water Quality Control Board under the Porter-Cologne Water Quality Act. Based on the methodology described in Section 4.3, both literature/data base review and a field delineation were conducted to determine the presence of Waters of the United States.

As outlined within the Corps and RWQCB protocol, a total of seven soil pit tests were dug within the Unnamed Drainage to confirm presence or absence of any wetlands. Of the total seven pits taken, two soil pit tests were determined not to be wetlands. The remaining five soil pits confirmed the presence of hydrophytic vegetation, hydric soil, and wetland hydrology, thus meeting the three parameters for wetlands. The CSLS biologists then delineated the extents of the wetland features based on the results of the soil pits and the Corps/RWQCB protocol. It should be noted, the wetlands onsite are minimal in quality and are associated with the existing storm drain inlet pipe and outlet found on the downstream end of the drainage and surface flows that immerge approximately 50 linear feet from the upstream inlet for approximately 100 linear feet.

[1] Currently, the April 2020 Waters of the United States definition is going through legal challenges, therefore the existing jurisdictional limits is based on existing ordinary high-water mark and includes ephemeral waters.

Overall, the wetlands found onsite consist of fallen tree debris and leaf litter, with canopies over the areas consisting of Brazilian peppertree, common fig, and eucalyptus trees and none to minimal native herbaceous layer. Further detail of the jurisdictional wetlands can be found within the Jurisdictional Delineation in Appendix A.

The total inventory of Waters of the United States is presented in Table 2 and shown on Figure 7.

Table 2. Jurisdictional Waters of the United States

Drainage	Total Non-wetland Acreage	Total Wetland Acreage	Total Acreage
Unnamed Drainage	0.03	0.04	0.07

5.7.3 Waters of the State

The Study Area includes Waters of the State that meet CDFW characteristics in accordance with FGC Section 1600 (Brady and Vyverberg 2013). The only Waters of the State jurisdictional feature located within the Study Area is the drainage located to the west of the Apartment complex due to the presence of biological and physical characteristics of a stream subject to the Jurisdiction of CDFW under FGC §1600 et seq. The Unnamed Drainage exhibits biological and physical indicators of Waters of the State through the presence of channel bed and bank and associated vegetation.

The total inventory of Waters of the State is presented in Table 3 and shown on Figure 7.

Table 3. Jurisdictional Waters of the State

Drainage	Total Acreage
Unnamed Drainage	0.78
Community Type found within Waters of the State limits	
California Rose Shrubland Alliance	*0.05*
Eucalyptus Woodland Alliance	*0.73*
Total	*0.78*

5.8 Soils Mapping

The United States Department of Agriculture Natural Resources Conservation Service lists four soil types (series) for the Study Area (Figure 8). The following soil types are located on the Study Area and described below.

Alo clay, 9 to 15 percent slopes (100)

Soils of the Alo series consist of well-drained soils in the foothills and have slopes of 9 to 15 percent. This soil generally occurs on ridges and toe slopes in the foothills. These

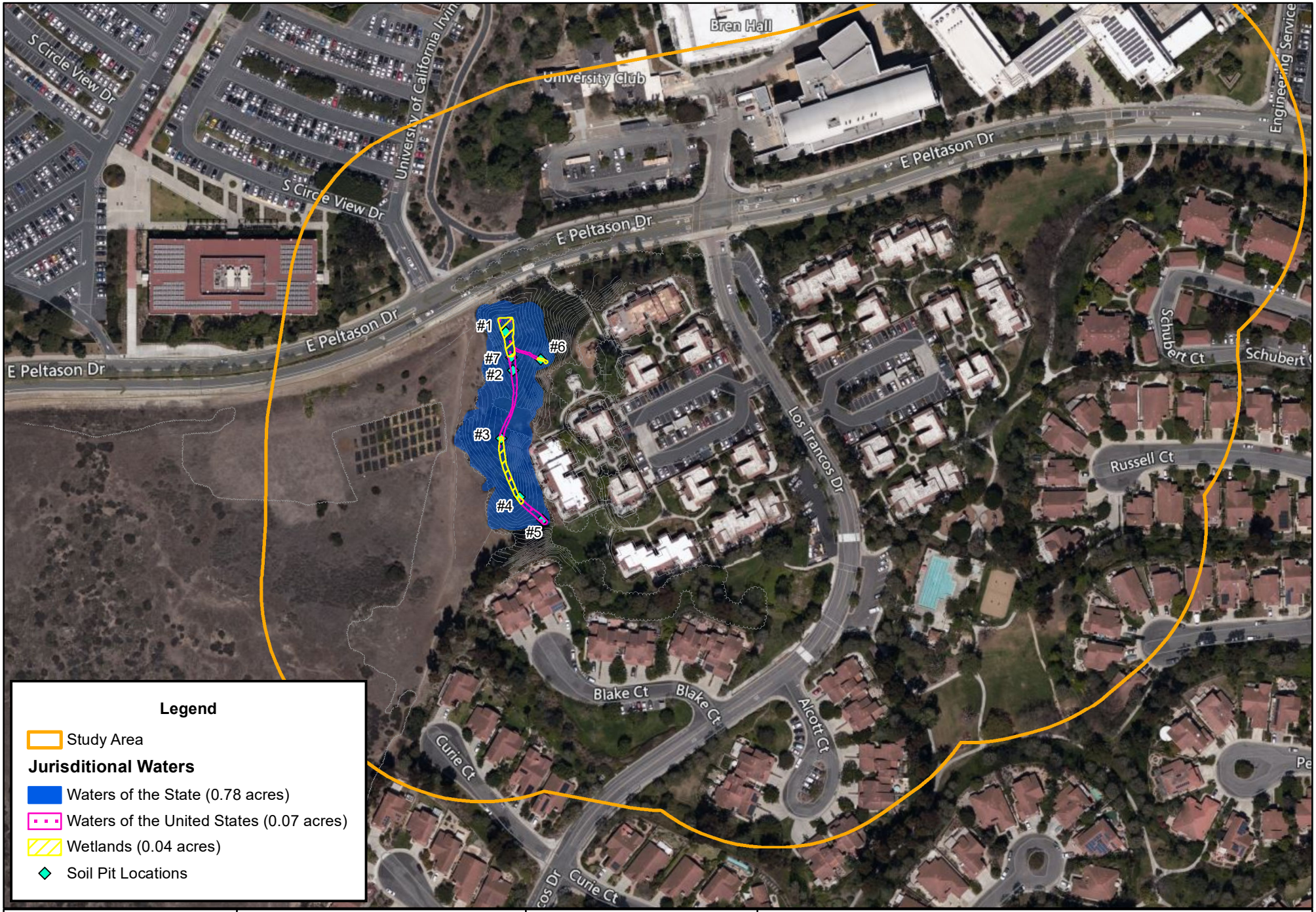
soils are formed in material weathered from fine grained sandstone or shale. The soil is slightly acid in the upper portion and is slowly permeable.

Alo clay, 15 to 30 percent slopes, Dry (101)
Soils of the Alo series consist of well-drained soils in the foothills and have slopes of 15 to 30 percent. This soil generally occurs on broad ridgetops in the foothills. These soils are formed in material weathered from fine grained sandstone or shale. The soil is slightly acid in the upper portion and is slowly permeable.

Bosanko clay, 9 to 15 percent slopes (126)
Soils of the Bosanko series consist of well-drained soils on foothills and have slopes of 9 to 15 percent. This soil is strongly sloping soil generally occur on broad hilltop ridges and toe slopes. If the soil is bare, runoff is medium, and the erosion hazard is moderate.

Bosanko clay, 15 to 30 percent slopes (127)
Soils of the Bosanko series consist of well-drained soils on foothills and have slopes of 15 to 30 percent. This soil is moderately steep soil occurs on broad hilltop ridges. If soil is bare, runoff is rapid, and the erosion hazard is high.

Calleguas clay loam, 50 to 75 percent slopes, eroded (134)
Soils of the Calleguas series consist of well-drained soils on uplands and have slopes of 50 to 75 percent. This is a very steep soil generally within south-facing slopes. These soils form in material weathered from lime coated shale or lime coated sandstone, or both.


Bren Hall
University Club
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University of California Irvine
E Peltason Dr
Engineering Service
Schubert Ct
Los Trancos Dr
Russell Ct
Blake Ct
Curie Ct
Alcott Ct
#1
#2
#3
#4
#5
#6
#7
Legend
Study Area
Jurisdictional Waters
Waters of the State (0.78 acres)
Waters of the United States (0.07 acres)
Wetlands (0.04 acres)
Soil Pit Locations
GIS Prepared By:
Carlson SLS
Created: May 29, 2020
0 50 100 200 300 400 Feet
1 inch = 200 feet
Data Source: Bing Maps
Field Survey 5/27/2020
Field Survey 5/28/2020
Area 12 Project Site
Jurisdictional Delineation

Figure 7

GIS Prepared By:
Carlson SLS

Created: June 5, 2020

Data Source: Bing Maps
USDA Natural Resource Conservation Service

Area 12 Project Site
Soils Map

Figure 8

6.0 Threshold of Significance

Appendix G of the CEQA Guidelines is used by public agencies in determining whether a project may have a significant impact on biological resources. Under Appendix G, a project may have a significant impact on biological resources if it would:

Threshold BIO-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 CDFW or USFWS.

Threshold BIO-B Have a substantial adverse effect on any riparian habitat or other sensitive plant community identified in local or regional plans, policies, regulations, or by the CDFW or USFWS.

Threshold BIO-C Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

Threshold BIO-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 areas.

Threshold BIO-E Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

Threshold BIO-F Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State Habitat Conservation Plan.

For the purposes of this impact analysis the following definitions apply:

- "Substantial adverse effect" means loss or harm of a magnitude which, based on current scientific data and knowledge would: (1) substantially reduce population numbers of a listed, candidate, sensitive, rare, or otherwise special status species; (2) substantially reduce the distribution of a sensitive plant community/habitat type; or (3) eliminate or substantially impair the functions and values of a biological resource (e.g., streams, wetlands, or woodlands) in a geographical area defined by interrelated biological components and systems. In the case of this analysis, the prescribed geographical area is considered to be the region

that includes the USGS topographic quadrangle for the site. For some species, the geographic area may extend to the vicinity of the site based on known distributions of the species.

- "Conflict" means contradiction of a magnitude, which based on foreseeable circumstances, would preclude or prevent substantial compliance.

- "Rare" means: (1) that the species exists in such small numbers throughout all, or a significant portion of, its range that it may become endangered if its environment worsens; or (2) the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered "threatened" as that term is used in the FESA.

7.0 Significance Determination and Proposed Mitigation

7.1 Regulatory Setting

Sensitive species are provided protection by either Federal or State resource management agencies, or both, under provisions of the FESA and CESA.

There are a number of performance criteria and standard conditions that must be met as part of any review and approval of the proposed project. These include compliance with all of the terms, provisions, and requirements with applicable laws that relate to Federal, State, and local regulating agencies related to potential impacts to sensitive plant and wildlife species, wetlands, riparian habitats, and blue lined stream courses. Impacts are sometimes locally important but not significant because, although they would result in an adverse alteration of existing local conditions, they would not substantially diminish or result in the permanent loss of an important resource on a population-wide or region-wide basis.

7.2 Project Related Impacts

For the purpose of this assessment, Project-related impacts consist of direct and indirect impacts. Direct impacts are considered to be those that involve the loss, modification or disturbance of natural habitats (i.e., vegetation or plant communities), which in turn, directly affect plant and wildlife species dependent on that habitat. Direct impacts also include the destruction of individual plants or wildlife, which is typically the case in species of no to low mobility (i.e., plants, amphibians, reptiles, and small mammals). The collective loss of individuals in these manners may also directly affect regional population numbers of a species or result in the physical isolation of populations thereby reducing genetic diversity and, hence, population stability.

Indirect impacts are considered to be those that involve the effects of increases in ambient levels of sensory stimuli (e.g., noise, light), unnatural predators (e.g., domestic cats and other non-native animals), and competitors (e.g., exotic plants, non-native animals). Indirect impacts may be associated with the construction and/or operation of a project; therefore, these impacts may be both short-term and long-term in their duration. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to project sites.

The determination of impacts in this analysis is based on the proposed Project development plan and the biological values of the habitat and/or sensitivity of plant and wildlife species to be affected. Any recommended mitigation measures to address impacts are discussed below, along with compliance of existing regulations.

7.2.1 Impacts to Vegetation Communities

Direct impacts resulting from Project implementation consist of any ground-disturbing activities (i.e., vegetation removal, grading, paving, structures, landscaping, fuel modification zone, etc.). These areas would be permanently affected by the construction of the Project. Calculations are based on the currently proposed development design (grading, brush management, and mitigation restoration areas) in conjunction with the vegetation map from field surveys and aerial imagery.

Indirect temporary impacts to plant communities include the effects of fugitive dust created by grading activities, vehicle construction traffic, or offsite discharge of surface water runoff with its associated erosion and sedimentation. Grading-related dust could settle on plant surfaces and indirectly inhibit metabolic processes such as photosynthesis and respiration. Grading-related erosion, runoff, sedimentation, soil compaction, and alteration of drainage patterns may affect plants by altering site conditions so that the location in which they are growing becomes unfavorable. Another example of indirect impacts includes the introduction and spread of invasive, exotic plants which could result in permanent indirect impacts to adjacent native plant communities.

Figure 9 and Table 4 describe and list the approximate total acreages of vegetation communities that will be impacted by Project activities within the Project boundary.

Table 4. Vegetation Community Impacts[1,2]

Vegetation Community	Existing Vegetation (acres)	*Phase 12-1 Impacts (acres)*	*Phase 12-2 Impacts (acres)*	Grand Total Impacts (acres)	Avoided (acres)
California Rose Shrubland Alliance	0.05	*0.00*	*0.00*	0.00	0.05
Toyon Shrubland Alliance	0.20	*0.00*	*0.10*	0.10	0.10
California buckwheat scrub Shrubland Alliance[1]	0.75	*0.00*	*0.00*	0.00	0.75
Non-Native Grasslands – Bromus Herbaceous Alliance[2]	3.69	*0.00*	*0.00*	0.00	3.69
Eucalyptus Woodland Alliance	0.73	*0.00*	*0.00*	0.00	0.73
Ornamental	6.05	*1.59*	*0.47*	2.06	3.99
Developed	29.43	*3.70*	*3.83*	7.53	21.90
TOTAL	40.9	*5.29*	*4.40*	9.69	31.21

1. California Buckwheat scrub shrubland alliance occurs only within the surrounding 300-foot buffer.
2. A total of 3.27-acres of Non-Native Grasslands Bromus Herbaceous Alliance occurs within the surrounding 300-foot buffer. The remaining 0.42-acres occurs on the Project site.

Direct impacts to the 2.06 acres of Ornamental community and 7.53 acres of Developed community onsite from both phases of Project implementation, which are not significant

because these areas consist of built environment and not native vegetation communities. Further, the species found within the Ornamental and Developed communities include common plant species which are present in large numbers throughout the region and the removal is not considered significant.

Direct impacts to 0.10 acres of Toyon Shrubland Alliance from Phase 12-2 Project implementation is not considered significant because while native, it does not contain any sensitive species, plants or wildlife, or represent sensitive habitats identified through CNDDB or CDFW sensitive plant communities. The species found within the alliance includes common plant species which are present in large numbers throughout the region and the removal is not considered significant.

No impacts are proposed to Non-Native Grasslands – Bromus Herbaceous Alliance, California buckwheat scrub Shrubland Alliance, California Rose Shrubland Alliance, or Eucalyptus Woodland Alliance.

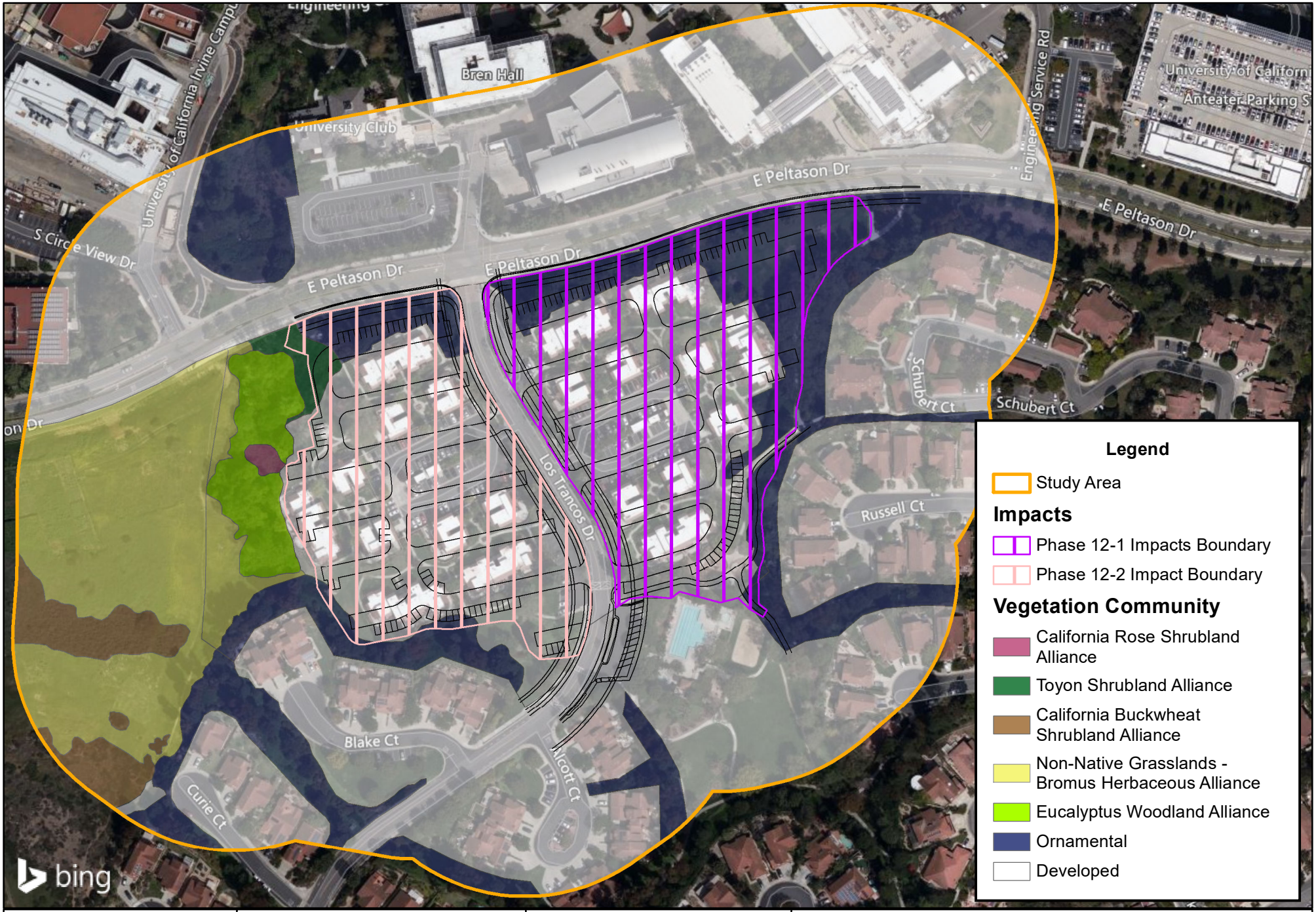
Indirect impacts to the surrounding 300-foot buffer area could occur from construction related noise for both Phases, however impacts would be less than significant because no sensitive habitat or sensitive species are located within the buffer area; the habitats are common in the Project Vicinity; the communities exhibit moderate level of disturbances; the area consists of non-native grasslands, coastal sage scrub, disturbed and developed vegetation communities; and construction BMP's such as compliance with air quality regulations would require frequent watering during construction activities to minimize dust. In addition, the buffer area located directly to the west of the Project site consists of grasslands, coastal sage scrub, and experimental vegetation projects associated with UCI and exhibits a moderate level of disturbance. Further, this area is within the NCCP/HCP preserve area.

7.2.2 Impacts to Jurisdictional Features

Any direct to the jurisdictional waters would require authorization from the Resource Agencies (Corps, CDFW, and RWQCB) before any impacts could commence.

No jurisdictional impacts are anticipated for the implementation of Phase 12-1 or Phase 12-2 (Figure 10). The design of the Project avoids all impacts to Waters of the United States and Waters of the State.

Indirect impacts to jurisdictional waters could occur due to erosion, siltation, and runoff during Project construction. Minimization and avoidance measures include the compliance with construction BMPs and NPDES requirements to minimize erosion, siltation and runoff to jurisdictional waters which are typically conditions outlined within Project NPDES and SWPPP.



GIS Prepared By:
Carlson SLS

Created: August 20, 2021

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Maps
Field Survey (5/27/2020)
Field Survey (5/28/2020)
Adams Streeter Civil Engineers (08/19/2021)

Area 12 Project Site

Vegetation Impacts

Figure 9

GIS Prepared By:
Carlson SLS

Created: August 20, 2021

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Maps
Field Survey (5/27/2020)
Field Survey (5/28/2020)
Adams Streeter Civil Engineers (08/19/2021)

Area 12 Project Site

Jurisdictional Impacts

Figure 10

7.3 Threshold BIO - A

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

Less than Significant with Mitigation Incorporated.

7.3.1 Sensitive Plant Species

No special status plant species exist within the Study Area. No suitable habitat for the plant species is found within the Study Area, and no observations of the species have been made; therefore, no impact would occur.

7.3.2 Sensitive Wildlife Species

The Study Area lacks suitable habitat for the 20 of the 22 special status wildlife identified below due to the built nature of the Study Area; therefore, no impacts are expected to occur.

As shown in Table 6 below, indirect impacts to Yellow-Breasted Chat may occur as a result of Project construction due to noise and ground disturbances. It was determined the Study Area contains limited suitable habitat for Yellow-Breasted Chat within the drainage area found onsite, specifically within the California Rose Shrubland Alliance. The Yellow-Breasted Chat requires tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. The species nests are typically associated with streams, swampy ground, and the borders of small ponds. The drainage consists of large dense eucalyptus trees with sparse shrub layer and sparse herbaceous layer, lacking dense willow thickets or well-developed understories required for the species. The California rose patch that occurs within the drainage provides limited habitat for the Yellow-Breasted Chat, however, the drainage lacks wide riparian woodlands, well-developed understory, swampy grounds, or streams in which to nests.

Suitable habitat for the white-tailed kite (California Fully-Protected Species) exists on the Project site for nesting and roosting and adjacent to the Project site in an existing habitat preserve for hunting and foraging. While not observed during surveys for this report, white-tailed kite has been observed nesting on the Project site by qualified birders from UCI biologists and Sea and Sage Audubon Society. Historically, a pair of white-tailed kites have been observed by UCI biologists and local birders nesting in the eucalyptus trees located offsite, specifically to the south of the Project, behind the homes off Blake Court adjacent to the NCCP/HCP Reserve area. In the 2021 Breeding Season, a nesting white-tailed kite pair was observed within the ornamental trees in the developed area on the Project site near the playground area, specifically Building 2018. Therefore, white-tailed kite is deemed present on the Project site.

The proposed Project has the potential to impact nesting/roosting habitat for the white-tailed kite. No suitable foraging habitat for the white-tailed kite is located on the Project site, however, suitable foraging habitat is located off the project site in an adjacent protected habitat reserve. Since the Project would not impact suitable foraging habitat on-site and the adjacent habitat reserve would remain and continue to provide suitable foraging habitat, no impacts to white-tailed kite foraging habitat would occur as a result of the proposed Project.

The proposed Project would remove existing ornamental trees found in the developed area used by white-tailed kite for nesting during the 2021 breeding season. No impacts would occur to the eucalyptus behind Blake Court, which is located offsite and to the south of the Project site and is a known historical nesting site of the white-tailed kites. Implementation of Mitigation Measure BIO-1 and BIO-2, which requires pre-construction nesting bird surveys, would reduce direct impacts to nesting white-tailed kite to less than significant. Under Mitigation Measure BIO-1, if an active nest were to be found prior to the start of construction, that nest would be protected through the end of nesting activity by a 500-foot protective no-work buffer established around the nest.

The proposed Project would remove existing ornamental and non-native mature trees within the developed area that provide nesting opportunities for the white-tailed kite. The trees were planted as part of an ornamental landscape palette and do not constitute sensitive habitat or species. While removal of the existing trees is considered adverse due to prior nesting activity, the impact does not rise to a level of significance because white-tailed kite has adapted to urban environments and numerous other nesting opportunities exist both on the Project site, such as in the eucalyptus woodland that will remain, and in existing trees located adjacent to the Project site. Furthermore, the proposed Project includes new landscaping, including trees, that will provide for future white-tailed kite nesting habitat. To further minimize the adverse impact and ensure future nesting habitat is provided, Mitigation Measure BIO-3 has been added to require the landscape palette for the proposed Project to include tree species selected in consultation with campus biologists suitable for white-tailed kite nesting. Impacts to white-tailed kite nesting habitat is considered less than significant.

Table 5. Impact Analysis Summary for Special Status Wildlife Species

Species	Extent of Impact	Significance of Impact
Tricolor blackbird, Grasshopper sparrow, Burrowing owl, coastal cactus wren, Mexican long-tongued bat, western yellow-bellied cuckoo, yellow rail, western pond turtle, western	Suitable habitat is not found on the Project site as identified within Section 5.5.	No Impact due to lack of suitable habitat onsite. Not observed during field surveys.

Species	Extent of Impact	Significance of Impact
mastiff bat, California black rail, Belding's savannah sparrow, Pacific pocket mouse, light-footed Ridgway's rail, California least tern, California Horned Lark, Coastal California gnatcatcher, Coastal Horned Lizard, Least Bell's Vireo, Red-Diamond Rattlesnake, and Western Spadefoot.		
Yellow-breasted chat	Potentially suitable habitat is found on the Project site as identified within Section 5.5.	Less than significant impact with pre-construction surveys. No species were observed on site during the May 2020 field surveys and limited suitable habitat occurs within the Study Area. Pre-construction surveys would ensure no direct and indirect impacts during vegetation removal and construction related noise impacts.
White-tailed kite	Suitable nesting habitat is found on the Project site as identified within Section 5.5.	Less than significant impact with pre-construction surveys, no-work buffer should a nest be observed, and applicable Nesting Bird Management Plan. Suitable nesting habitat occurs onsite and suitable foraging habitat occurs within the Study Area. Pre-construction surveys, no-work buffer if a nest is observed, and Nesting Bird Management Plan would ensure no

Species	Extent of Impact	Significance of Impact
		direct and indirect impacts during vegetation removal and construction related noise impacts.

Direct impacts associated with vegetation removal may occur to all avian species covered under the MBTA with the removal of potential nesting and foraging habitat. If Project construction is scheduled to occur during the typical breeding bird season (January 1 through August 15 for raptors and February 15 through August 31 for all other avian species), direct removal of vegetation and indirect short-term noise effects to birds that may forage or nest onsite or within the buffer area may occur. In order to reduce direct and indirect impacts on nesting birds, if vegetation removal and/or construction activities were to occur during nesting bird season, a pre-construction nesting bird survey would be required within five (5) days of ground disturbances during typical nesting bird season to delineate any active nests found within the Study Area. Should an active nest be observed, a no-work buffer shall occur surrounding the active nest, until determined by the Project Biologist it has become inactive. The implementation of the pre-construction nesting bird survey would prevent any direct or indirect impacts due to the removal of vegetation and construction-related noise on species covered under the MBTA.

The Migratory Bird Treaty Act protects nesting activities of both native and non-native bird species. Under the Act it is unlawful to harm, harass, or take a nest. Pre-construction nesting bird surveys as outlined within Mitigation Measure BIO – 1 (MM BIO - 1) would ensure protection against direct impacts associated with vegetation removal or indirect impacts associated with construction related noise impacts for the Yellow-Breasted Chat, the white-tailed kite, and other avian species covered under the MBTA during the typical nesting bird season. Implementation of MM BIO-1 would reduce potential impacts to special status wildlife species to less than significant.

MM BIO – 1: If grading or site disturbance is to occur between January 1 through August 15 for raptors and February 15 through August 31 for all other avian species, a nesting bird survey shall be conducted within all suitable habitat, onsite and within 300-feet surrounding the site (as feasible), by a qualified biologist within no more than 5 days of scheduled vegetation removal or start of ground disturbing activities, to determine the presence of nests or nesting birds. If active nests are identified, the biologist shall establish buffers around the vegetation (500 feet for raptors and sensitive species, 200 feet for non-raptors/non-sensitive species). All work within these buffers shall be halted until the nesting effort is finished (i.e. the juveniles are surviving independent from the nest). The onsite biologist shall review and verify compliance with the no-work buffers and verify the nesting effort has finished. Work can resume when no other active nests are found onsite or within the surrounding

buffer area. Alternatively, a qualified biologist may determine that construction can be permitted within the buffer areas of an active nest with preparation and implementation of a monitoring plan to prevent any impacts while the nest continues to be active (eggs, chicks, etc.). Upon completion of the survey and any follow-up construction avoidance management, a report shall be prepared documenting mitigation monitoring compliance. If ground disturbances have not commenced within 5 days of a negative survey or if construction activities have stopped for 5 days or longer, the nesting survey must be repeated to confirm the absence of nesting birds.

Furthermore, since removal of vegetation could result in impacts to white-tailed kites and other raptor species, the following mitigation measures are included to reduce impacts to less than significant (MM BIO-2 and MM BIO-3).

MM BIO – 2: A qualified biologist shall remain on-site during all vegetation clearing and perform periodic site inspections (1-2 times/week) during grading-related activities. Should a white-tailed kite nest be detected, a buffer of a minimum of 500 feet shall be established and no activity shall occur within the buffer zone until the biologist determines, and CDFW confirms, that all chicks have fledged and are no longer reliant on the nest site.

MM BIO - 3: The landscape plans for the proposed Project shall include tree species that provide suitable nesting habitat for the white-tailed kite, selected in consultation with campus biologist, such as, Western Sycamore (*Plantanus Racemosa*), London Planetree (*Platanus x acerifolia*), coast live oak (*Quercus agrifolia*), and eucalyptus trees *(Eucalyptus sp.) or* similar ornamental trees with height *t*hat provide suitable nesting habitat for white-tailed kite.

In addition to the pre-construction surveys and planting of suitable nesting habitat for avian species described in MM BIO-1 through BIO-3, a Nesting Bird Plan shall be prepared to further avoid impacts to the white-tailed kite and other avian species. The Nesting Bird Management Plan shall establish no-work buffer areas based on species and requirements for monitoring of any observed nest(s) through fledging of young by a qualified biological monitor. Since there is no proposal or need to relocate, take, or capture wildlife, including mammals, birds, and the nests and eggs thereof, reptiles, and amphibians, fish, certain plants, and invertebrates for scientific, educational, and propagation purposes through Section 650, Title 14, California Code of Regulations, a Scientific Collecting Permit will not be necessary. Therefore, to minimize impacts further for the white-tailed kite and other avian species the Nesting Bird Management Plan shall be required prior to grading as outlined within MM BIO-4.

MM BIO – 4: Prior to the issuance of a grading permit, the Applicant, in conjunction with UCI Biologists, shall prepare a Nesting Bird Management Plan (NBP) that includes project specific avoidance and minimization measures to ensure that

impacts to nesting birds do not occur and that the project complies with all applicable laws related to nesting birds and birds of prey. Migratory non-game native bird species are protected by international treaty under the federal Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 U.S.C. 703 et seq.). In addition, Sections 3503, 3503.5, and 3513 of the FGC prohibit the take of all birds and their nests.

The NBP shall include, at a minimum: monitoring protocols; survey timing and duration; and project-specific avoidance and minimization measures including, but not limited to: project phasing and timing, monitoring of project-related noise, sound walls, and buffers. If an active bird nest is located, the Designated Biologist(s) shall implement and monitor specific avoidance and minimization measures as specified in the prepared NBP.

With the implementation of MM BIO-1, MM BIO-2, MM BIO-3, and MM BIO - 4 potential adverse impacts to nesting birds and special status wildlife species are reduced to a less than significant level.

7.3.3 Critical Habitat

The Study Area does not contain a designated Critical Habitat overlay. The closest designated Critical Habitat is located approximately 1.35 miles west for the CAGN. No designated Critical Habitat is located onsite; therefore, there are no potential impacts to designated Critical Habitat due to Project implementation.

7.4 Threshold BIO- B

Would the Project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

No Impact.

The Project has been designed to avoid all direct impacts to Jurisdictional Waters. The avoided jurisdictional waters are found within the western portion of the Project site.

The Waters of the State occurs to the west of the Apartment complex and contains existing storm drain inlets and outlet and associated headwalls. The Waters of the State have minimal biological value, composed mainly of eucalyptus trees and other non-native species. Typical riparian corridors have the highest quality vegetation located in the center of the jurisdictional area, where flows tend to concentrate. The vegetation density and quality tend to decrease farther from the center of the drainage. The Waters of the State that occur onsite is heavily vegetated with eucalyptus trees with scattered native species, such as black willow, scrub oak, and California rose. The understory consists mainly of bare ground at the center of the drainage and where flows tend to concentrate, and instead these areas consist of fallen tree debris and heavy eucalyptus

and pine leaf litter. The lack of understory vegetation and the majority of bare areas is due to eucalyptus cover and potential allelopathic toxins from the leaf litter. The understory areas that are vegetated include scattered non-native and native species, with the native species occurring primarily in the downstream end of the drainage. The quality of the drainage is characterized as poor due to the presence of dense non-native species, bare understory, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse.

Indirect impacts to jurisdictional waters could occur due to erosion, siltation, and runoff during Project construction. Minimization and avoidance measures include compliance with construction BMPs and NPDES requirements to minimize erosion, siltation and runoff to jurisdictional waters which are typically conditions outlined within Project NPDES and SWPPP.

As part of Project implementation, no impacts are expected to occur to Waters of the State and no mitigation is required.

7.5 Threshold BIO - C

Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No Impact.

As part of Project implementation two outlet structures and associated headwalls will be installed adjacent to the existing drainage to replace the existing outlets. Installation of these storm drain features are located outside of Waters of the United States, as a result no direct impacts are expected to occur to Waters of the United States.

The Waters of the United States found onsite occur to the west of the Apartment complex and contain existing stormdrain inlets and outlets and associated headwalls. The Waters of the United States found onsite are poor in quality. The areas determined to be within the OHWM lack vegetation and consist of fallen tree debris and leaf litter. The canopy over the Waters of the United States is heavily vegetated with eucalyptus trees and scattered native species, such as black willow and California rose. The understory consists of bare ground, fallen tree debris, and heavy eucalyptus and pine leaf litter. The lack of understory vegetation and the majority of bare areas is due to eucalyptus cover and potential allelopathic toxins from the leaf litter. The understory areas that are vegetated include scattered non-native and native species, with the native species occurring primarily in the upstream and downstream end of the drainage. The quality of the drainage is determined to be poor due to the presence of dense non-native species, bare understory, lack of typical riparian species, and does not exhibit the typical characteristics of a natural stream or watercourse.

The wetlands onsite provide minimal biological value and are associated with the existing storm drain inlet pipe and outlet found on the downstream end of the drainage, as well as the surface flows that immerges approximately 50 linear feet from the upstream inlet. Overall, the wetlands onsite consist of fallen tree debris and leaf litter with canopies over the areas consisting of Brazilian peppertree, common fig, and eucalyptus trees with minimal native herbaceous layer.

As part of Project implementation, no impacts are expected to occur to Waters of the United States and no mitigation is required.

7.6 Threshold BIO - D

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less than Significant with Mitigation Incorporated.

7.6.1 Wildlife Movement

The site supports potential live-in and movement habitat for species on a local scale (i.e., some limited live-in and marginal movement habitat for reptile, bird, and mammal species), however, the site provides little to no function to facilitate wildlife movement on a regional scale. Furthermore, the site is not identified as a regionally important dispersal or seasonal migration corridor under the NCCP/HCP. Movement on a local scale likely occurs with species adapted to urban environments due to the surrounding development and disturbances in the vicinity of the site. Although implementation of the Project would result in disturbances to local wildlife movement within the site, those species adapted to urban areas would be expected to persist on-site following construction. As such, impacts would be less than significant, and no mitigation measures would be required.

7.6.2 Migratory Birds and Raptors

The Study Area supports potential nesting and foraging habitat for migratory birds, in addition to potential nesting and foraging habitat for raptors. Based on the developed nature of the site, the quality of foraging habitat is considered to be low. Higher quality foraging habitat occurs in less developed areas with larger expanses of open space. The loss of a relatively small acreage of foraging habitat as a result of the proposed Project would not cause a significant loss of foraging habitat for migratory birds and raptors. Therefore, impacts to foraging habitat would be less than significant and no mitigation measures are required.

The site supports songbird and raptor nests due to the presence of a shrubs, ornamental species, and eucalyptus trees. Nesting activity typically occurs from January 1 through August 15 for raptors and February 15 through August 31 for all other avian species. Disturbing or destroying active nests is a violation of the MBTA (16 U.S.C. 703

et seq.). In addition, nests and eggs are protected under Fish and Wildlife Code Section 3503. As such, direct impacts to breeding birds (e.g. through nest removal) or indirect impacts (e.g. by noise causing abandonment of the nest) is potentially significant. Compliance with the MBTA would reduce impacts to a less than significant level, as detailed in MM BIO-1.

7.7 Threshold BIO - E

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

No Impact.

The Project is not subject to any local policies, such as a tree preservation ordinance, that protect biological resources. Therefore, no impacts would occur, and no mitigation is necessary.

7.8 Threshold BIO - F

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Less Than Significant with Mitigation.

While the Study Area is located within the NCCP/HCP Plan area, the Project site is not located within any reserve or preserve designated area of the NCCP/HCP. However, the UCI NCCP/HCP Preserve area is located directly west of the Project site as identified in the UCI Long Range Development Plan (LRDP) (Figure 5). No direct impacts would occur to NCCP/HCP preserve area since the Project site is not located within designated preserve or reserve area and the site does not contain any special status vegetation.

Potential indirect impacts may occur to NCCP/HCP Preserve area due to construction related noise within the Study Area. If Project construction is scheduled to occur during the typical breeding bird season (January 1 through August 15 for raptors and February 15 through August 31 for all other avian species), short-term noise effects to birds that may forage or nest within the buffer area may occur. In order to reduce indirect impacts, if vegetation removal and/or construction activities were to occur on the Project site during nesting bird season, a pre-construction nesting bird survey would be required within five (5) days of ground disturbances during typical nesting bird season to delineate any active nests found within the Study Area. Buffer distance is 300 for songbirds and 500-feet for raptors and sensitive species. No work buffer areas are to be included within the Nesting Bird Management Plan. Compliance with MM BIO-1 would reduce impacts to a less than significant level.

8.0 Cumulative Impacts

The loss of biological resources on the Study Area must be considered in the context of the other development in the area. The Project's direct impact analysis identified nesting birds, and white-tailed kite, that when combined with impacts from other reasonably past, present, and future projects, could result in a cumulative biological impact. Direct impacts may occur to nesting birds, including white-tailed kite, should construction activities and vegetation removal take place during the typical nesting season. However, adherence and implementation of MM BIO - 1 through MM BIO – 4 will ensure impacts to special status species and their habitats are minimized thus reducing the Project's contribution to cumulative impacts to less than significant.

Potential cumulative impacts to the white-tailed kite can occur from the loss of nesting habitat and foraging habitat. White-tailed kite has adapted to urban environments and human activity and are often found nesting in trees in developed areas, as evidenced by the observations of white-tailed kite nesting on the Project site. While the proposed Project will remove existing trees suitable for white-tailed kite nesting, numerous other trees located on the Project site and throughout the UCI campus provide suitable nesting opportunities for white-tailed kite. Furthermore, the landscape palette for the proposed Project is required to include tree species with height and proper canopy/leaf cover suitable for white-tailed kite nesting, therefore, the loss of nesting habitat would only be temporary. Since numerous nesting opportunities exist beyond the Project site for white-tailed kite, no cumulative impacts to nesting habitat would occur as a result of the proposed Project.

Development on the UCI campus and surrounding area have a greater potential to impact foraging habitat for white-tailed kite and other raptors than loss of nesting habitat. The development of open fields, including those with ruderal vegetation, contribute to the loss of foraging habitat. The proposed Project constitutes the reuse of an existing developed area, and no direct impacts are anticipated to the surrounding Non-Native Grasslands – Bromus Herbaceous Alliance. Therefore, the proposed Project would not directly impact foraging habitat for white-tailed kite or other raptors. A habitat preserve located adjacent to the site provides suitable foraging habitat, and no impacts will occur to the habitat preserve. Since the proposed Project does not directly impact foraging habitat, the proposed project does not contribute to cumulative loss of foraging habitat. As UCI continues to build out its Master Plan, future projects must be analyzed for contributions to a cumulative loss of foraging habitat for white-tailed kites and other raptors. Future projects that reuse existing developed areas, similar to the proposed Project, will likely not contribute to a cumulative loss of foraging habitat. However, future projects that impact vacant land could have a cumulative considerable impact depending on the location and design of the project. Since the proposed Project is the reconstructed of developed area and does not impact foraging habitat, the proposed project does not contribute to a cumulative impact, which is less than significant.

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APPENDIX A

Jurisdictional Delineation

Memorandum

Date: June 1, 2020

To: Bryce Bunker, Irvine Campus Housing Authority on behalf of University of California, Irvine

From: Brianna Bernard, Carlson Strategic Land Solutions

Subject: Jurisdictional Delineation for the Area 12 Project site located in the City of Irvine

Carlson Strategic Land Solutions (SLS) prepared this Jurisdictional Delineation for the Irvine Campus Housing Authority (ICHA) on behalf of University of California, Irvine (UCI) at the Area 12 Site (Project Site) in the City of Irvine. The jurisdictional assessment for the approximately 11-acre Project site and the surrounding 300-feet, collectively known as the "Study Area," incorporates the findings from a field survey and jurisdictional delineation conducted on May 28, 2020.

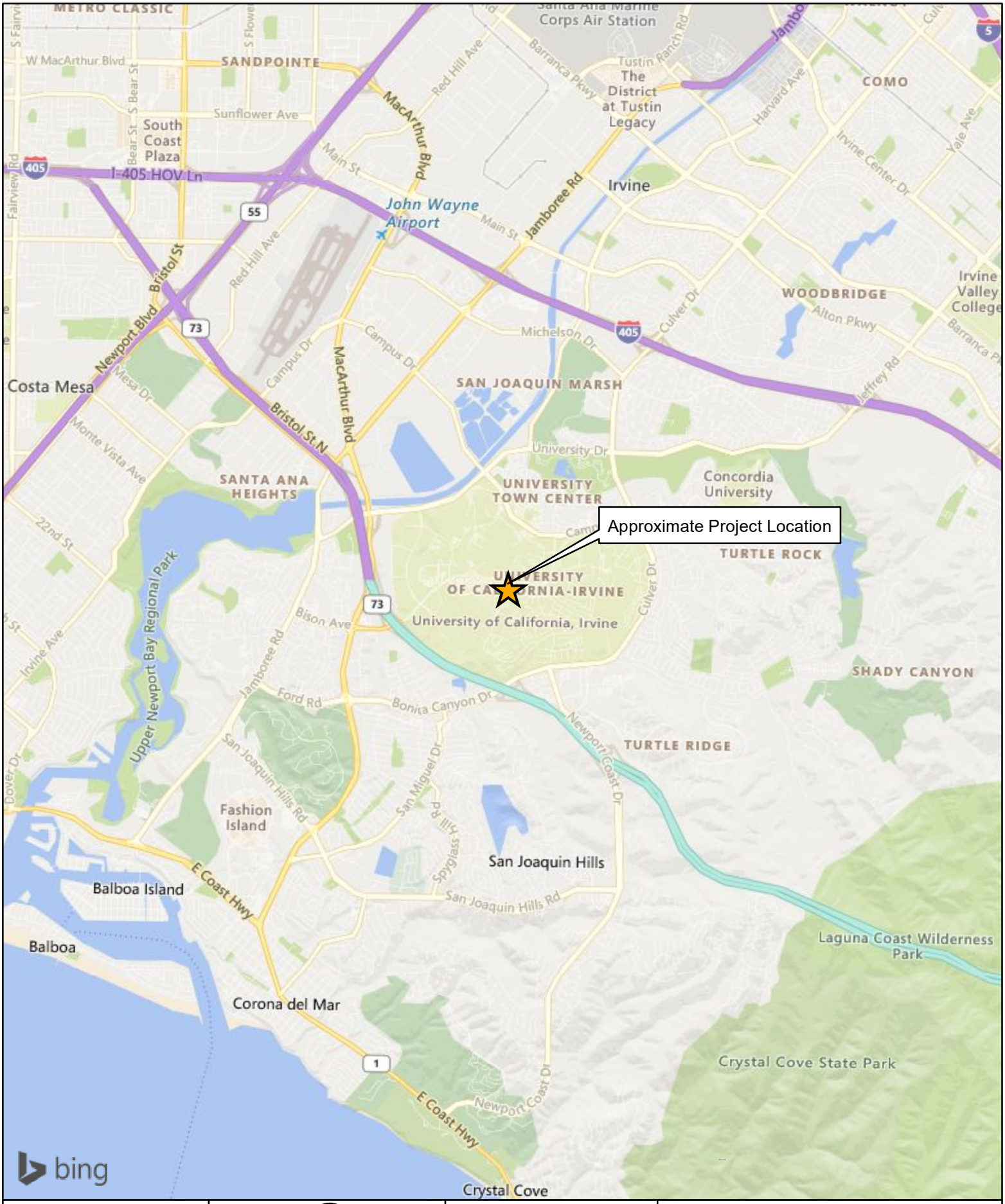
1.0 Project Location

The Study Area is located in the City of Irvine, south of East Peltason Drive, west of Los Trancos Drive at the Las Lomas Apartments (Figures 1 and 2). Areas surrounding the Study Area include the University of California, Irvine to the north; residential located to the south and east; and open/space and Orange County Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) Preserve to the west (Figure 2). The Study Area is located within the United States Geological Survey (USGS) 7.5-Minute Topographic Map *Tustin* Quadrangle.

Access to the Project site is from East Peltason Drive and Los Trancos Drive.

2.0 Project Description

The Project proposes to demolish the existing Apartment building and in its place construct detached homes located at the existing Las Lomas Apartments. The Project includes demolition of the existing Apartment complex and parking lots, re-grading of the Project site, installation of new infrastructure, including new storm drain outlets, and construction of the proposed detached homes for University of California, Irvine faculty. The existing water, sewer, electric, telephone and gas service mains will remain.



GIS Prepared By:
Carlson SLS

Created: June 1, 2020

0 1,250 2,500 5,000 7,500 Feet
1 inch = 5,000 feet

Data Source: Bing Roads Map

Area 12 Project Site

Regional Location

Figure 1

GIS Prepared By:
Carlson SLS

Created: May 18, 2020

0 50 100 200 300 400 Feet

1 inch = 200 feet

Data Source: Bing Maps

Area 12 Project Site
Approximate Project Site

Figure 2

3.0 Methodology

3.1 Jurisdictional Waters

Prior to the field investigation, SLS biologists reviewed aerial imagery, topographic maps, and background information for the Study Area to determine the potential for perennial, intermittent, or ephemeral drainages and associated riparian resources.

3.1.1 Federal Clean Water Act (CWA)

The Clean Water Act (CWA), Section 401 provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator to obtain a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The Regional Water Quality Control Board administers the certification program in California. Section 404 establishes a permit program administered by the United States Army Corps of Engineers (Corps) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. The Corps implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the United States Environmental Protection Agency in conjunction with Corps (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

3.1.2 Wetlands and Other Waters of the United States

Aquatic resources, including riparian areas, wetlands, and certain aquatic vegetation communities, are considered sensitive biological resources and fall under the jurisdiction of several regulatory agencies. The Corps exerts jurisdiction over waters of the United States, including all waters that are subject to the ebb and flow of the tide; wetlands and other waters such as lakes, rivers, streams (including intermittent or ephemeral streams), mudflats, sandflats, sloughs, prairie potholes, vernal pools, wet meadows, playa lakes, or natural ponds; and tributaries of the above features. The extent of waters of the United States is generally defined as the portion that falls within the limits of the Ordinary High-Water Mark (OHWM). The OHWM is defined as the "line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

The Study Area falls into the Special Area Management Plan (SAMP) for the San Diego Creek Watershed. The SAMP was developed by the Corps in partnership with CDFW to establish a

Watershed Streambed Alteration Agreement process for the San Diego Creek Watershed. The SAMP includes a cohesive, watershed-specific plan to address anticipated permitting needs and compensatory mitigation to improve the long-term management of aquatic resources within the watershed. The underlying goal of the SAMP is to support riparian ecosystem conservation and management by comprehensively assessing the watershed's aquatic resources and developing and strategic and coordinated regulatory approach, both in permitting and mitigation. The approach to achieve the underlying goal prioritizes avoidance of impacts to higher integrity aquatic resources and envisions targeted enhancement and restoration activities related to regulatory actions that will maintain and improve the watershed's aquatic resource functions and values over the long term.

It is important to note regarding Corps Section 404 jurisdiction that on April 21, 2020, the U.S. Environmental Protection Agency (EPA) and the Corps published the Navigable Waters Protection Rule to define "Waters of the United States" in the Federal Register. The April 2020 definition includes four simple categories of jurisdictional waters, including: (1) the territorial seas and traditional navigable waters; (2) perennial and intermittent tributaries to those waters; (3) certain lakes, ponds and impoundments; and (4) wetlands adjacent to jurisdictional waters. The April 2020 definition provides clear exclusions for many water features that traditionally have been regulated, such as ephemeral drainages. While the April 2020 definition has been formally adopted by EPA and the Corps, it is going through legal challenges and could be overturned by a court. Furthermore, it is unclear whether the new definition would apply to projects within the SAMP. Given the uncertainty of the April 2020 definition and the governance of the Study Area by the SAMP, this Biological Resources Assessment relies on the prior definition of jurisdictional limits consistent with the requirements in the SAMP.

Wetlands, including swamps, bogs, seasonal wetlands, seeps, marshes, and similar areas, are defined by Corps as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3[b]; 40 CFR 230.3[t]). Indicators of three wetland parameters (i.e., hydric soils, hydrophytic vegetation, and wetlands hydrology), as determined by field investigation, must be present for a site to be classified as a wetland by Corps (USACE 1987).

It is important to note that the RWQCB definition of wetland was redefined and the new definition went into effect May 28, 2020. The definition of a wetland is as follows: An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration

of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation. This RWQCB modified three-parameter definition is similar to the federal definition in that it identifies three wetland characteristics that determine the presence of a wetland: wetland hydrology, hydric soils, and hydrophytic vegetation. Unlike the federal definition, however, the RWQCB wetland definition allows for the presence of hydric substrates as a criteria for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5% cover) to be considered a wetland.

However, if any vegetation is present, then the Corps delineation procedures would apply to the vegetated component (i.e., hydrophytes must dominate). Examples of waters that would be considered wetlands by the RWQCB definition, but not by the federal wetland definition, are non-vegetated wetlands, or wetlands characterized by exposed bare substrates like mudflats and playas, as long as they met the three-parameters as described in the RWQCB definition. It is important to note that while the Corps may not designate a feature as a wetland, that feature could be considered a special aquatic site or other water of the U.S. by the Corps and potentially subject to Corps' jurisdiction.

3.1.3 Porter-Cologne Water Quality Act – California Code, Division 7

The RWQCB also has jurisdiction over waters deemed "isolated" or not subject to Section 404 jurisdiction under the Solid Waste Agency of Northern Cook County v. Corps decision. Dredging, filling, or excavation of isolated waters constitutes a discharge of waste to waters of the state and prospective dischargers are required to obtain authorization through an Order of Waste Discharge or waiver thereof from the RWQCB and comply with other requirements of Porter-Cologne Act.

Under Section 401 of the CWA, the local RWQCB (for this project, the Santa Ana RWQCB) must certify that actions receiving authorization under Section 404 of the CWA also meet state water quality standards. The RWQCB requires projects to avoid impacts to wetlands if feasible and requires that projects do not result in a net loss of wetland acreage or a net loss of wetland function and values. Compensatory mitigation for impacts to wetlands and/or waters of the state is required.

3.1.4 California Fish and Game Code Section 1600-1616

Waters of the State are regulated by the California Department of Fish and Wildlife (CDFW) through Section 1600 et seq. of the California Fish and Game Code. Section 1600 et seq. requires notifying the CDFW prior to any project activity that might (1) substantially divert or obstruct the natural flow of any river, stream, or lake; (2) substantially change or use any material from the

bed, channel, or bank of any river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. If, after this notification, the CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will need to be obtained. CDFW may then place conditions in the Section 1602 Streambed Alteration Agreement to avoid, minimize, and mitigate any potentially significant adverse impacts within CDFW jurisdictional limits.

The limits of Waters of the State are defined as the "body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." Therefore, the limits extend from the channel bed to the top of the bank, with the addition of the canopy of any riparian habitat associated with the watercourse.

4.0 Results

4.1 Jurisdictional Water

A single drainage occurs to the west of the Apartment complex containing existing stormdrain inlets and outlets and associated headwalls. The ephemeral feature receives flows from sub-drains collecting runoff from the adjacent streets and residential developments. The drainage is heavily vegetated with Eucalyptus Woodland Alliance and to a lesser degree California Rose Shrubland Alliance.

The Eucalyptus Woodland Alliance is composed mainly of eucalyptus trees with 85% of eucalyptus tree cover. The Eucalyptus Woodland Alliance includes scattered Mexican palm trees, pine trees, toyon, common fig, jade plant, Brazilian pepper, lemonade berry, two scrub oaks, a single western sycamore, and black willow, which is located on the upstream and the downstream end of the drainage. The understory consists mainly of bare ground with fallen tree debris and eucalyptus and pine leaf litter. The understory has scattered brome, mugwort, Italian thistle, tocolote, shortpod mustard, shortleaf spikesedge, scarlet pimpernel, and yerba mansa, which is located on the downstream end of the drainage.

The California Rose Shrubland Alliance found within the drainage is composed entirely of California rose. The understory is bare ground.

4.2 Waters of the United States

This section relies on the term "Waters of the United States" as it applies to the jurisdictional limits under the authority of the Army Corps of Engineers[1] under the Clean Water Act and applies to the jurisdiction of the Regional Water Quality Control Board under the Porter-Cologne Water Quality Act. Based on the methodology described in Section 3.0, both literature/data base review and a field delineation were conducted to determine the presence of Waters of the United States.

As outlined within the Corps and RWQCB protocol, a total of seven soil pit tests were dug within the Unnamed Drainage to confirm presence or absence of any wetlands (Appendix A). Of the total seven pits taken, two soil pit tests were determined not to be wetlands. The remaining five soil pits confirmed the presence of hydrophytic vegetation, hydric soil, and wetland hydrology, thus meeting the three parameters for wetlands. The SLS biologists then delineated the extents of the wetland features based on the results of the soil pits and the Corps/RWQCB protocol. It should be noted, the wetlands onsite are minimal in quality and are associated with the existing storm drain inlet pipe and outlet found on the downstream end of the drainage and surface flows that immerge approximately 50 linear feet from the upstream inlet for approximately 100 linear feet. Overall, the wetlands found onsite consist of fallen tree debris and leaf litter, with canopies over the areas consisting of Brazilian peppertree, common fig, and eucalyptus trees and none to minimal native herbaceous layer.

The total inventory of Waters of the United States is presented in Table 1 and shown on Figure 3.

Table 1. Jurisdictional Waters of the United States within the Project site

Drainage	Total Non-wetland Acreage	Total Wetland Acreage	Total Acreage
Unnamed Drainage	0.03	0.04	0.07

4.2.1 Wetlands

As outlined within the Corps and RWQCB protocol, a total of seven soil pit tests were dug within the Unnamed Drainage to confirm presence of any wetlands. Of the total seven pits taken, two soil pit tests were determined not to be wetlands. The remaining five soil pits confirmed the presence of hydrophytic vegetation, hydric soil, and wetland hydrology. The Biologists then delineated the extents of the wetland features based on the results of the soil pits and the Corps/RWQCB protocol. It should be noted, much of the wetland vegetation consists of canopy cover with sparse shrub layer and herbaceous layer.

[1] Currently, the April 2020 Waters of the United States definition is going through legal challenges, therefore the existing jurisdictional limits is based on existing ordinary high-water mark and includes ephemeral waters.

The wetlands onsite are poor in quality. The wetlands are associated with the existing stormdrain inlet pipe and outlet found on the downstream end of the drainage and surface flows that immerge approximately 50 linear feet from the upstream inlet.

4.3 Waters of the State

The Study Area includes Waters of the State that meet CDFW characteristics in accordance with FGC Section 1600. The Waters of the State jurisdictional feature located within the Study Area is the drainage located to the west of the Apartment complex due to the presence of biological and physical characteristics of a stream subject to the Jurisdiction of CDFW under FGC §1600 et seq. The Unnamed Drainage exhibits biological and physical indicators of Waters of the State through the presence of channel bed and bank and associated vegetation. The total inventory of Waters of the State is presented in Table 2 and shown on Figure 3.

Table 2. Jurisdictional Waters of the State within the Project Site

Drainage	Total Acreage
Unnamed Drainage	0.78
Community Type found within Waters of the State limits	
California Rose Shrubland Alliance	*0.05*
Eucalyptus Woodland Alliance	*0.73*
Total	***0.78***

While wetlands occurred onsite, riparian vegetation is minimal and consists of yerba mansa, located on the downstream end, and black willow trees, located at the outlet and inlet of the drainage.

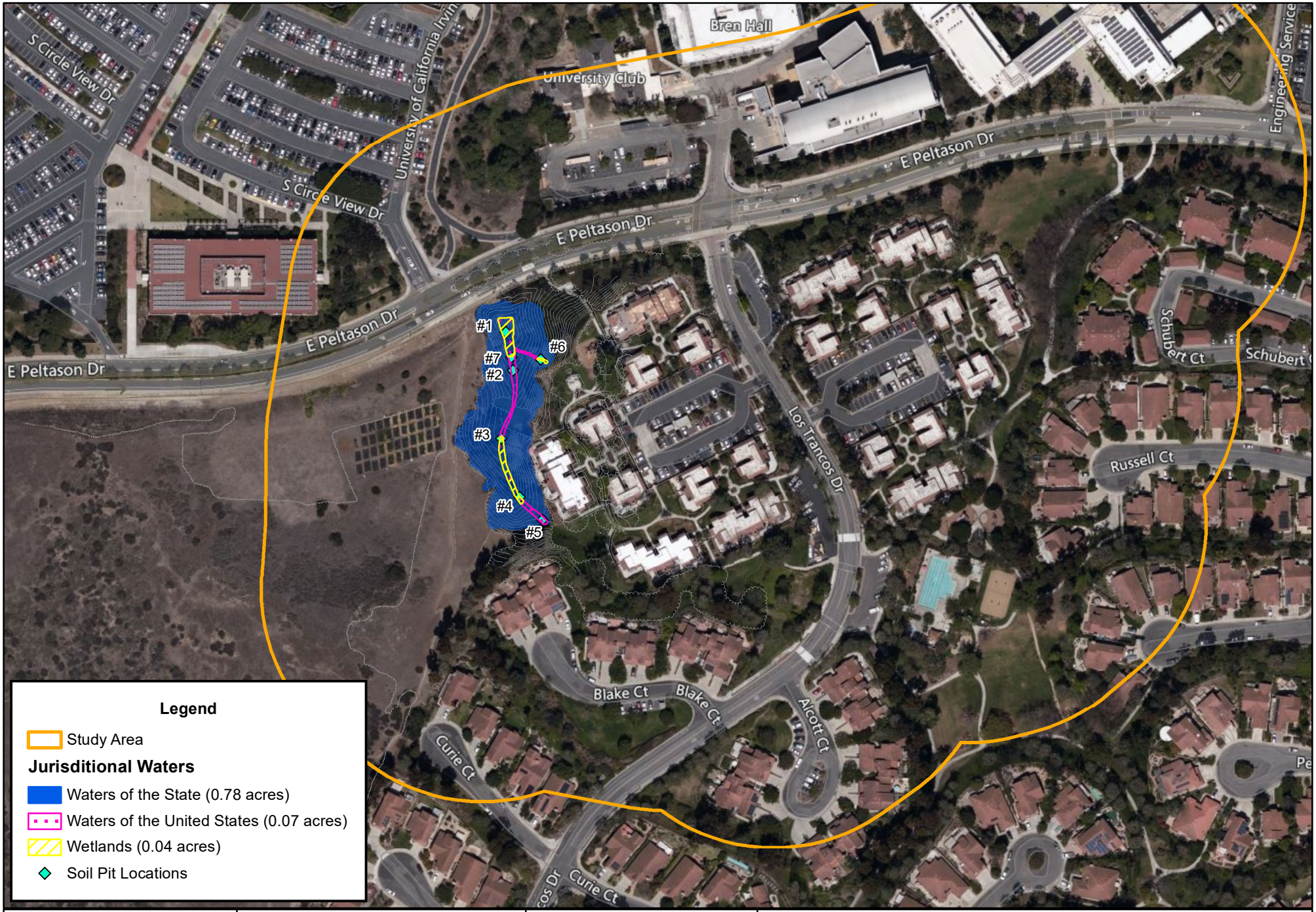

Bren Hall
University Club
Engineering Service
S Circle View Dr
University of California Irvine
E Peltason Dr
Schubert Ct
Schubert
Los Trancos Dr
Russell Ct
Blake Ct
Alcott Ct
Curie Ct
#1
#2
#3
#4
#5
#6
#7
Legend
Study Area
Jurisditional Waters
Waters of the State (0.78 acres)
Waters of the United States (0.07 acres)
Wetlands (0.04 acres)
Soil Pit Locations
GIS Prepared By:
Carlson SLS
Created: May 29, 2020
0 50 100 200 300 400 Feet
1 inch = 200 feet
Data Source: Bing Maps
Field Survey 5/27/2020
Field Survey 5/28/2020
Area 12 Project Site
Jurisdictional Delineation

Figure 3

5.0 Impacts

Direct impacts to the jurisdictional waters would require authorization from the Corps, CDFW, and RWQCB before any impacts could commence.

The Project proposes to avoid all direct impacts to the Waters of the State and Waters of the United States.

Indirect impacts to jurisdictional waters could occur due to erosion, siltation, and runoff during Project construction. Minimization and avoidance measures include the compliance with construction BMPs and NPDES requirements to minimize erosion, siltation and runoff to jurisdictional waters.

6.0 Summary

As part of Project implementation, direct impacts to Waters of the U.S. and Waters of the State have been completely avoided. Due to the presence of dense non-native species, bare understory, and lack of typical riparian species, the quality of the drainage found onsite is considered to be poor in quality and does not exhibit the typical characteristics of a natural stream or watercourse.

Please contact me at bbernard@carlsonsls.com or 949.542.7042, should you have any questions or comments.

Brianna Bernard
Project Manager

Enclosures:

- Figures:
  - Figure 1: Regional Location
  - Figure 2: Project Site Location Map
  - Figure 3: Jurisdictional Delineation

- Attachment A: Soil Pit Worksheets
- Attachment B: Representative Photographs

ATACHMENT A

Soil Pit Worksheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 05/28/2020

Applicant/Owner: ICHA on behalf of UCI State: CA Sampling Point: #1

Investigator(s): Bri Bernard/Crysta Dickson Section, Township, Range:

Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): C Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:
drainage was created when adjacent development was constructed. Drainage contain Storm outlet/inlet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix Nigra	20	N	FACW
2. Palm - Washingtonia robusta	5	N	UPL
3. Pinus sp.	5	N	UPL
4.			
	30	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15)			
1. Rhus integrifolia	5	N	UPL
2.	5	N	UPL
3.			
4.			
5.			
		= Total Cover	

Herb Stratum (Plot size: 5)			
1. Anemopsis californica	50	Y	OBL
2. Schoenoplectus actus	2		OBL
3.			
4.			
5.			
6.			
7.			
8.			
	52	= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1. N/A			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum 60-70 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
debris- dead branches, leaf litter
0.5 - 26
0.2 - 10.4 > dominance 50/20
- yerba mansa, present near outlet, a single tule was observed.

SOIL

Sampling Point: #1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5Y 3/1	95	7.5YR 4/4	5	C	PL	loamy/clay	-

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

moist soil, roots/ sticks

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- X Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerials → dense vegetation canopy

Remarks:

soil is moist.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 05/28/2020
Applicant/Owner: LCHA on behalf of UCI State: CA Sampling Point: #2
Investigator(s): Bri Bernard, Crysta Dickson Section, Township, Range:
Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	Is the Sampled Area within a Wetland? Yes ____ No X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
drainage was created when adjacent development was constructed. Drainage contains inlets/outlets

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Braz pepper - Schinus terebinthifolius	75	✓	FAC
2. Quercus ag.	10		UPL
3. Salix nigra	10		FACW
4. Euc.	10		UPL
Palm - washingtonia robusta	5		UPL
	110	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Toyon - Heteromeles arbutifolia	25		UPL
2.			
3.			
4.			
5.			
	25	= Total Cover	

Herb Stratum (Plot size: 5')			
1. None			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1. None			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
Leaf litter, fall on trees, high percentage of invasive species
0.5 → 55
0.2 → 22 > dominance

SOIL

Sampling Point: #2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR/2.5/2 ~~100~~ 95%		5YR/3/4	5	C	PL	sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:
living roots
some cobble

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerials ⇒ dense canopy cover

Remarks:
soils more friable, less clay-like
surface soil cracks, ½-1" deep – evidence of standing H_2O

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 5/28/2020
Applicant/Owner: ICHA on behalf of UCI State: CA Sampling Point: #3
Investigator(s): Bri Bernard/Krysta Dickson Section, Township, Range:
Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Drainage contains storm outlet/inlet. Drainage was constructed when adjacent development was constructed.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Eve sp	70	✓	UPL
2. Schinus terebithifolia	58	✓	FAC
3.			
4.			
	128	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. Heteromeles integrifolia	10		UPL
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size: 5')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____	= Total Cover	
Woody Vine Stratum (Plot size: 0)			
1. none			
2.			
	____	= Total Cover	

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 1/2 = 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
leaf litter
fallen tree branches
under the canopy

0.5 = 64
0.2 = 25.6

SOIL

Sampling Point: #3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	7.5YR/2.5/1	100	NONE				clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

water from upstream filled pit

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-12"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerial ⇒ dense canopy cover

Remarks:

Surface water present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 05/28/2020
Applicant/Owner: ICHA on behalf of UCI State: CA Sampling Point: #4
Investigator(s): BriBernard, Crysta Dickson Section, Township, Range:
Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ~~X~~
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____
Is the Sampled Area within a Wetland? Yes X No ~~X~~

Remarks:
Drainage was created when adjacent development was constructed. Drainage contains storm outlet/inlet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Ficus - Ficus carica	80	Y	FACU
2. Braz. pepper - Schinus terebinthifolius	80	Y	FAC
3. Euc	5	N	UPL
4. Sycamore - Platanus racemosa	5	N	FAC
	170	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15')			
1. Ficus - Ficus carica	5	N	FACU
2.			
3.			
4.			
5.			
	5	= Total Cover	

Herb Stratum (Plot size: 5')			
1. none			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	0	= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1. none			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 ~~(2)~~ (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ~~0/2~~ = 050% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	—	x 1 =	—
FACW species	—	x 2 =	—
FAC species	85	x 3 =	255
FACU species	85	x 4 =	340
UPL species	5	x 5 =	25
Column Totals:	175 (A)		620 (B)

Prevalence Index = B/A = 620/175 = 3.54

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ~~X~~

Remarks:
leaf litter
fallen branches
exposed tree roots.

0.5 ⇒ 85
0.2 ⇒ 34

SOIL

Sampling Point: #4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10"	7.5YR 2.5/1	100%	None				loamy / clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): Yes

Type: roots

Depth (inches): 6-10"

Hydric Soil Present? Yes X No ___

Remarks:

Filled with water, soils saturated, soil pit filled with water

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ~~X~~ Depth (inches): 1-inch

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerial ⇒ Dense Canopy Cover

Remarks:

Surface water downstream, soil pit filled with water

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 05/28/2020
Applicant/Owner: ICTA on behalf of UCI State: CA Sampling Point: #5
Investigator(s): Dr Bernard, Crysta Dickson Section, Township, Range:
Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes X No ~~X~~	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	40		OBL
2. Schinus terebinthifolia	50	✓	FAC
3.			
4.			
	90	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. none			
2.			
3.			
4.			
5.			
	0	= Total Cover	
Herb Stratum (Plot size: 5')			
1. Brome	30		UPL
2. Crassula ovata	30		UPL
3. Lysimachia arvensis	15		FAC
4. Solanum nigrum	1		UPL
5. Kyllinga brevifolia	1		–
6.			
7.			
8.			
	78	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. none			
2.			
	0	= Total Cover	

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 1/1 = 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No ____

Remarks:
near storm drain inlet, some low-lying veg, however majority is bare.
0.5 ⇒ 45
0.2 ⇒ 18

SOIL

Sampling Point: #5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8"	7.5YR 3/1	100	None				Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ___ No X

Remarks:

Roots, earth worm, no hydric soils present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): ~8"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerial ⇒ dense canopy cover

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 5/28/2020

Applicant/Owner: ICHA on behalf of UCI State: CA Sampling Point: H 16

Investigator(s): Bri Bernardi, Crysta Dickson Section, Township, Range: _____

Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): ~10%

Subregion (LRR): C Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii	40		FAC
2. Schinus terebinthifolia	80	V	FAC
3.			
4.			
	120	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15)			
1. Heteromeles arbutifolia	30		UPL
2.			
3.			
4.			
5.			
	_____	= Total Cover	
Herb Stratum (Plot size: 5)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____	= Total Cover	
Woody Vine Stratum (Plot size: 0)			
1. none			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 % (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:

Pipe coming out leaf litter,

0.5 ⇒ 60

0.2 ⇒ 24

SOIL

Sampling Point: H6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10"	7.5YR 2.5/1	100%	none				loamy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none

Depth (inches): ___

Hydric Soil Present? Yes X No ___

Remarks:

filled w/ water, soil saturated

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ___ Depth (inches): 1"

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0-10"

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

aerial → dense canopy cover

Remarks:

surface water present.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Area 12 City/County: Irvine/Orange Sampling Date: 5/28/2020
Applicant/Owner: ICHA on behalf of UCI State: CA Sampling Point: #7
Investigator(s): Bri Bernard | Krysta Dickson Section, Township, Range:
Landform (hillslope, terrace, etc.): bottomland Local relief (concave, convex, none): none Slope (%): 0
Subregion (LRR): C Lat: Long: Datum:
Soil Map Unit Name: NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No	**Is the Sampled Area within a Wetland?** Yes No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X No	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix nigra	30	✓	FACW
2. Washingtonia robusta	10		UPL
3.			
4.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Rhus integrifolia	5		UPL
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Anemopsis californica	20	✓	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	20 = Total Cover		
Woody Vine Stratum (Plot size: 0)			
1. NA			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 80 % Cover of Biotic Crust

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 2/2 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
__ Prevalence Index is ≤3.0[1]
__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks:
debris - dead branches
0.5 = 20
0.2 = 8

SOIL

Sampling Point: #7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5YR 3/1	95	7.5YR 4/4	5	C	PL	loamy clay	—

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- X Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present): none

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

moist soil, Roots/Sticks

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- X Sediment Deposits (B2) (**Riverine**)
- X Drift Deposits (B3) (**Riverine**)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): _____

Water Table Present? Yes ___ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

denial → dense canopy

Remarks:

soil is moist

ATTACHMENT B

Representative Photographs

Non-native grasslands and eucalyptus grove vegetation community.

Looking southeast at the eucalyptus grove and non-native vegetation communities.

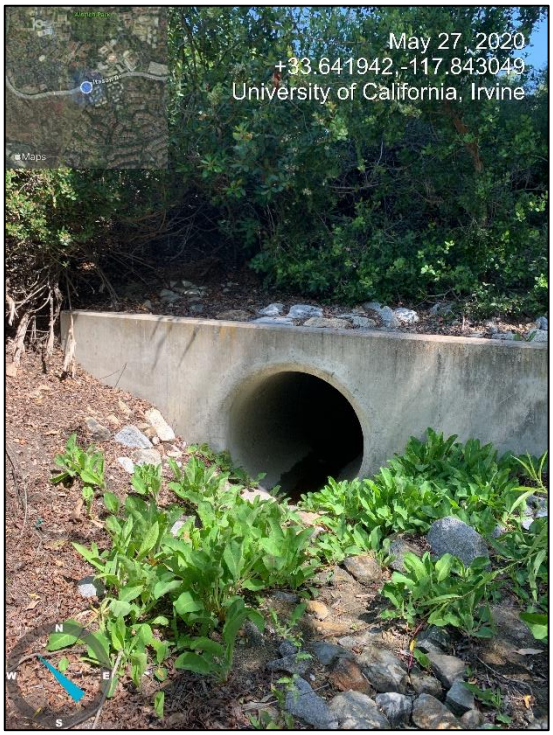
Looking at the downstream end of the drainage.

California rose patch found within the drainage.

The drainage area consists of non-native trees, fallen tree debris, and leaf litter.

The upstream area of the drainage contains black willows.

Upstream stormdrain inlets into the drainage.



Downstream drainage outlet with yerba mansa.

Existing stormdrain inlet located on the downstream end of the drainage.

Surface flow located halfway through the drainage.

APPENDIX B

Representative Photographs of Community Classifications

Ornamental vegetation community located on the west side of the Project site.

Non-native grasslands and eucalyptus grove vegetation community.

Looking southeast at the eucalyptus grove and non-native vegetation communities.

Looking at the downstream end of the drainage.

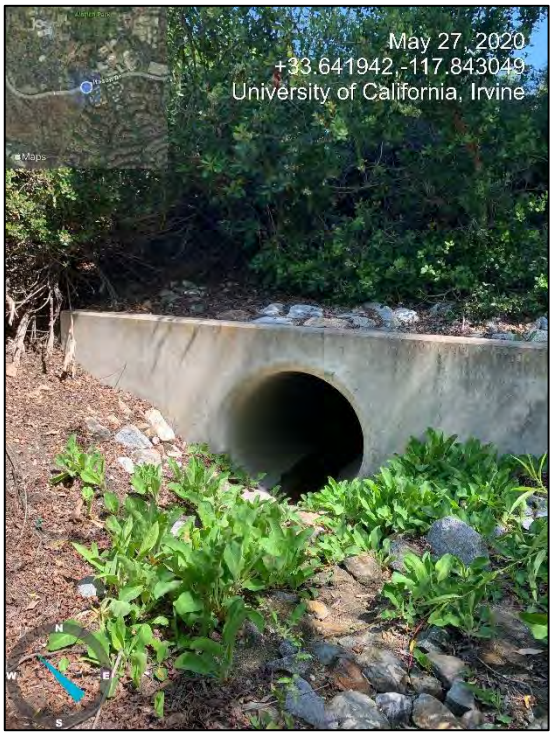
California rose patch found within the drainage.

The drainage area consists of non-native trees, fallen tree debris, and leaf litter.

The upstream area of the drainage contains black willows.

Upstream stormdrain inlets into the drainage.

Apartment complex, which is developed community.



Downstream drainage outlet with yerba mansa.

Existing stormdrain inlet located on the downstream end of the drainage.

Surface flow located halfway through the drainage.

APPENDIX C

Special Status Plant Species Potential Occurrence Determination

APPENDIX C

Special Status Plant Species Potential Occurrence Determination

This table summarizes conclusions from analysis and field surveys regarding the potential occurrence of special status plant species within the Project site for the USGS 7.5-Minute Topographic Map Tustin and the surrounding two-mile radius. During the field surveys, the potential for special status plant species to occur within the Project site was assessed based on the following criteria:

- Present: observed on the site during the field surveys, or recorded on-site by other qualified biologists.

- Known to Occur: observed on site in the recent past, but not observed during the most recent biological survey.

- High potential to occur: observed in similar habitat in the region by a qualified biologist or habitat on the site is a type often utilized by the species, and the site is within the known distribution and elevation range of the species.

- Moderate potential to occur: reported sightings in surrounding region, or the site is within the known distribution and elevation range of the species, and habitat on the site is a type occasionally used by the species.

- Low potential to occur: the site is within the known distribution and elevation range of the species, but habitat on the site is rarely used by the species or for which there are no known recorded occurrences of the species within or adjacent to the site.

- None: a focused study failed to detect the species or no suitable habitat is present.

- Unknown: the species' distributional/elevation range and habitat are poorly known.

Even with field surveys, biologists assessed the probability of occurrence rather than make a definitive conclusion about species presence or absence. Failure to detect the presence of the species is not definitive and may be due to variable effects associated with fire, rainfall patterns, and/or season.

Special Status Plants: Potential to Occur within the Study Area

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
Atriplex coulteri	Coulter's saltbush	CRPR: 1.B2	Alkaline or Clay soils supporting coastal bluff scrub, coastal dunes, coastal scrub, valley and foothill grassland habitats. Known from 3 to 460 meters (9 to 1,500 feet) MSL. Blooms March through October.	None. While the site contains non-native grasslands, the site lacks suitable soils. Not observed during field surveys.
Atriplex pacifica	South Coast saltscale	CRPR: 1.B2	Habitats supporting coastal bluff scrub, coastal dunes, coastal scrub, and playas. Known from 0 to 140 meters (0 to 460 feet) MSL. Blooms March through October.	None. The site lacks suitable habitats. Not observed during field surveys.
Atriplex serenana var. davidsonii	Davidson's saltscale	CRPR: 1.B2	Alkaline soils supporting coastal bluff scrub and coastal scrub. Known from 10 to 200 meters (32 to 660 feet) MSL. Blooms April through October.	None. The site lacks suitable habitats. Not observed during field surveys.
Calochortus catalinae	Catalina mariposa lily	CRPR:4.2	Perennial bulbiferous herb. Habitat include chaparral, cismontane woodland, coastal sage scrub, and valley and foothill grasslands. Known from 15 to 700 meters (49 to 2,700 feet) MSL. Blooms March through June	None. The site lacks suitable habitat. Not observed during field surveys.
Calochortus weedii var. intermedius	Intermediate mariposa lily	CRPR: 1.B2	Rocky and calcareous soils supporting chaparral, valley and foothill grassland and coastal scrub. Known from 105 to 855 meters (344 to 2,800 feet) MSL. Blooms May through July.	None. While the site contains minimal non-native grasslands, the site lacks suitable soils. Not observed during field surveys.
Camissioniopsis lewisii	Lewis' evening primrose	CRPR: 3	Sandy or clay soils supporting coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, or valley and foothill grasslands. Known from 0 to 300 meters (0 to 984 feet) MSL. Blooms March through May (June).	None. The site lacks suitable habitats. Not observed during field surveys.
Centromadia parryi ssp. australis	Southern tarplant	CRPR: 1.B2	Habitats supporting marshes and swamps (margins), valley and foothill grasslands (vernally mesic), and vernal pools. Known from 0 to 480 meters (0 to 1,575 feet) MSL. Blooms May through November.	None. The site lacks suitable habitats. Not observed during field surveys.
Convolvulus simulans	Small-flowered morning-glory	CRPR: 4.2	Clay soils and serpentinite seeps supporting coastal scrub, chaparral (openings), or valley and foothill grasslands. Known from 30 to 740 meters (98 to 2,400 feet) MSL. Blooms March through July.	None. The site lacks suitable habitats. Not observed during field surveys.
Dudleya multicaulus	Many-stemmed dudleya	CRPR: 1B.2	Chaparral, coastal scrub, and valley and foothill grassland. Often found on clay soils or granitic outcrops. Known from below 800 meters (< 2,600	None. The site lacks suitable habitat and soils. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
			feet) MSL. Blooms May through July.	
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	CRPR: 1A	Habitats include marshes and swamps (coastal salt and freshwater). Known from 10 to 1,525 meters (32 to 5,000 feet) MSL. Blooms August through October.	None. The site lacks suitable habitats. Not observed during field surveys.
Hordeum intercedens	Vernal barley	CRPR: 3.2	Habitats include coastal dunes, coastal scrub, valley and foothill grasslands (saline flats and depressions), and vernal pools. Known from 5 to 1,000 meters (16 to 3,300 feet) MSL. Blooms March through June.	None. The site lacks suitable habitats. Not observed during field surveys.
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	CRPR: 1B.2	Habitats include marshes and swamps (coastal salt), playas, and vernal pools. Known from 1 to 1,220 meters (3 to 4,000 feet) MSL. Blooms February through June.	None. The site lacks suitable habitats. Not observed during field surveys.
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	CRPR: 4.3	Habitats include chaparral and coastal scrub. Known from 1 to 885 meters (3 to 2,900 feet) MSL. Blooms January through July.	None. The site lacks suitable habitats. Not observed during field surveys.
Nama stenocarpa	Mud nama	CRPR: 2B.2	Habitats include marshes and swamps (lake margins, riverbanks). Known from 5 to 500 meters (16 to 1,600 feet) MSL. Blooms January through July.	None. The site lacks suitable habitats. Not observed during field surveys.
Nasturtium gambelii	Gambel's water cress	FE, ST CRPR: 2B.2	Habitats include marshes and swamps (fresh water or brackish). Known from 5 to 330 meters (16 to 1,000 feet) MSL. Blooms April through October.	None. The site lacks suitable habitats. Not observed during field surveys.
Senecio aphanactis	Chaparral ragwort	CRPR: 2B.2	Sometimes alkaline soils supporting chaparral, cismontane woodland and coastal scrub. Known from 15 to 800 meters (50 to 2,600 feet) MSL. Blooms January through April (May).	None. The site lacks suitable habitats and soils. Not observed during field surveys.
Sidalcea neomexicana	Salt spring checkerbloom	CRPR: 2B.2	Alkaline or mesic soils supporting chaparral, coastal scrub, lower montane coniferous forest, mojavean desert scrub, or playas. Known from 15 to 1,530 meters (50 to 5,000 feet) MSL. Blooms March through June.	None. The site lacks suitable habitats and soils. Not observed during field surveys.
Suaeda esteroa	Estuary seablite	CRPR: 1B.2	Marshes and swamps (coastal salt). Known from 0 to 5 meters (0 to 16 feet) MSL. Blooms (May)July through October (January).	None. The site lacks suitable habitats and soils. Not observed during field surveys.
Symphyotrichum defolatum	San Bernardino aster	CRPR: 1B.2	Near ditches, streams, and springs and associated habitats including Cismontane woodland, coastal scrub, lower montane coniferous forest, meadows and seeps, marshes and swamps, valley and foothill grassland (vernally mesic). Known from 2 to 2,040	None. The site lacks suitable habitats and soils. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence within the Study Area
			meters (7 to 6,700 feet) MSL. Blooms July through November (December).	

Legend

Federal Endangered Species Act (ESA) Listing Codes: federal listing is pursuant to the Federal Endangered Species Act of 1973, as amended (ESA).
FE = federally listed as endangered: any species, subspecies, or variety of plant or animal that is in danger of extinction throughout all or a significant portion of their range.
FT = federally listed as threatened: any species, subspecies, or variety of plant or animal that is considered likely to become endangered throughout all or a significant portion of its range within the foreseeable future.

California Endangered Species Act (CESA) Listing Codes: state listing is pursuant to § 1904 (Native Plant Protection Act of 1977) and §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code, relating to listing of Endangered, Threatened and Rare species of plants and animals.
SE = state listed as endangered: any species, subspecies, or variety of plant or animal that are in serious danger of becoming extinct throughout all, or a significant portion, of their range.
ST = state listed as threatened: any species, subspecies, or variety of plant or animal that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future.

California Rare Plant Ranks (Formerly known as CRPR Lists): the CRPR is a statewide, non-profit organization that maintains, with CDFG, an Inventory of Rare and Endangered Plants of California. In the spring of 2011, CRPR and CDFG officially changed the name "CRPR List" or "CRPR Ranks" to "California Rare Plant Rank" (or CPRP). This was done to reduce confusion over the fact that CRPR and CDFG jointly manage the Rare Plant Status Review Groups and the rank assignments are the product of a collaborative effort and not solely a CRPR assignment.

CRPR: 1B - California Rare Plant Rank 1B (formerly List 1B): Plants Rare, Threatened, or Endangered in California and Elsewhere. All of the plants constituting California Rare Plant Rank 1B meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

CRPR: 2 - California Rare Plant Rank 2 (formerly List 2): Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere. All of the plants constituting California Rare Plant Rank 2 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and are eligible for state listing. It is mandatory that they be fully considered during preparation of environmental documents relating to CEQA.

CRPR: 4 - California Rare Plant Rank 4 (formerly List 4): Plants of Limited Distribution - A Watch List. Very few of the plants constituting California Rare Plant Rank 4 meet the definitions of Sec. 1901, Chapter 10 (Native Plant Protection Act) or Secs. 2062 and 2067 (California Endangered Species Act) of the California Department of Fish and Game Code, and few, if any, are eligible for state listing. Nevertheless, many of them are significant locally, and CRPR and CDFG strongly recommend that California Rare Plant Rank 4 plants be evaluated for consideration during preparation of environmental documents relating to CEQA.

California Native Plant Society (CRPR) Threat Ranks: The CRPR Threat Rank is an extension added onto the California Rare Plant Rank (CRPR) 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.

0.1 = seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 = fairly endangered in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Sources:

- Calflora website - search for plants (Calflora 2020).
- CRPR Inventory of Rare and Endangered Plants (CRPR 2020).
- The Status of Rare, Threatened, and Endangered Plants and Animals of California, 2000–2004 (CDFW 2020).
- The Jepson Manual: *Vascular Plants of California,* second edition (Baldwin *et al.* 2012).
- RareFind, CDFW, California Natural Diversity Database (CNDDB) (CDFW 2020f).
- State and Federally Listed Endangered, Threatened, and Rare Plants of California (CDFW 2020i).

APPENDIX D

Plant Species Recorded During the Field Surveys

Appendix D contains the list of vascular plant taxa recorded during the May 27 and May 28, 2020 biological surveys conducted within the Study Area; however ornamental/landscaped vegetation is generally not included. Plant nomenclature and taxonomic order is based on *The Jepson Manual: Vascular Plants of California, s*econd Edition (Baldwin *et al.* 2012).

Appendix D
Plant Species Observed during the Field Survey

Scientific Name	Common Name
Eudicots	
Anacardiaceae	**Sumac or Cashew Family**
Malosma laurina	laurel sumac
Rhus integrifolia	lemonade berry
*Schinus terebinthifolius**	Brazilian peppertree
Araliaceae	**Ginseng Family**
*Hedera helix**	English ivy
***Asteraceae* (*Compositae*)**	**Sunflower Family**
Artemisia californica	California sagebrush
Artemisia douglasiana	California mugwort
Artemisia dracunculus	tarragon
Baccharis pilularis	coyote bush
*Carduus pycnocephalus**	Italian plumeless thistle
*Centaurea melitensis**	tocalote (Malta star thistle)
*Centaurea solstitialis**	yellow star-thistle
*Cynara cardunculus**	artichoke thistle
Deinandra fasciculata	clustered tarweed
Encelia californica	California brittle bush
*Euchiton involucratus**	Common cudweed
*Helminthotheca echioides**	bristly oxtongue
Brassicaceae (Cruciferae)	**Mustard Family**
*Hirschfeldia incana**	summer mustard
Cactaceae	**Cactus Family**
Opuntia littoralis	Coast prickly pear
Crassulaceae	**Stonecrop Family**
*Crassula ovata**	jade plant
Fagaceae	**Oak Family**
Quercus berberidifolia	scrub oak

Scientific Name	Common Name
Lamiaceae	**Mint Family**
Salvia apiana	white sage
Moraceae	**Mulberry Family**
*Ficus carica**	edible fig
Myrsinaceae	**Myrsine Family**
*Lysimachia arvensis**	scarlet pimpernel
Myrtaceae	**Myrtle Family**
*Eucalyptus sp.**	eucalyptus
Pinaceae	**Pine Family**
*Pinus sp.**	pine
Plantanceae	**Sycamore Family**
*Platanus ×hispanica**	London planetree
Platanus racemosa	California sycamore
Plumbaginaceae	**Leadwort Family**
*Plumbago auriculata**	Blue plumbago
Polygonaceae	***Buckwheat Family***
Eriogonum fasciculatum	California buckwheat
Rosaceae	**Rose Family**
Heteromeles arbutifolia	toyon
Rosa californica	California rose
Salicaceae	**Willow Family**
Populus fremontii	Fremont cottonwood
Salix nigra	black willow
Saururaceae	**Lizard's-tail Family**
Anemopsis californica	yerba mansa
Solanaceae	**Nightshade Family**
*Solanum nigrum**	black nightshade
Monocots	
Arecaceae	**Palm Family**
*Washingtonia robusta**	Washington fan palm
Cyperaceae	**Sedge Family**
Schoenoplectus acutus	common tule
*Kyllinga brevifolia**	shortleaf spikesedge

Scientific Name	Common Name
Poaceae	**Grass Family**
*Avena fatua**	wild oat
*Bromus diandrus**	ripgut grass
*Bromus madritensis**	Foxtail brome
*Centaurea melitensis**	tocolote
*Festuca microstachys**	Rat-tail fescue
*Hordeum murinum**	Foxtail barley
*Poa pratensis**	Kentucky blue grass
Legend	
* exotic plant species	

APPENDIX E

Special Status Wildlife Species Potential Occurrence Determination

APPENDIX E

Special Status Wildlife Potential Occurrence Determination

This table summarizes conclusions from analysis and field surveys regarding the potential occurrence of special status wildlife species within the Project site for the USGS 7.5-Minute Topographic Map Tustin and the surrounding two-mile radius. During the field surveys, the potential for special status wildlife species to occur within the Project Site was assessed based on the following criteria:

- Present: observed on the site during the field surveys, or previously recorded on-site by other qualified biologists.

- Known to Occur: observed on site in the recent past, but not observed during the most recent biological survey.

- High potential to occur: observed in similar habitat in the region by a qualified biologist or habitat on the site is a type often utilized by the species, and the site is within the known distribution and elevation range of the species.

- Moderate potential to occur: reported sightings in surrounding region, or the site is within the known distribution and elevation range of the species, and habitat on the site is a type occasionally used by the species.

- Low potential to occur: the site is within the known distribution and elevation range of the species, but habitat on the site is rarely used by the species or for which there are no known recorded occurrences of the species within or adjacent to the site.

- None: a focused study failed to detect the species or no suitable habitat is present.

- Unknown: the species' distributional/elevation range and habitat are poorly known.

Even with field surveys, biologists assessed probability of occurrence rather than make definitive conclusions about species presence or absence. Failure to detect the species is not definitive and may be due to variable effects associated with migration, weather, fire, and/or time of day and year.

Special Status Wildlife: Potential to Occur within the Study Area

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
Accipiter cooperii	Cooper's hawk	WL	The Cooper's hawk breeds primarily in riparian areas and oak woodlands and is most common in montane canyons. It frequents landscapes where wooded areas occur in patches and groves and often uses patchy woodlands and edges with snags for perching. Dense stands with moderate crown-depths are usually used for nesting. They hunt in broken woodland and habitat edges. Within the range in California, it most frequently uses dense stands of live oak, riparian deciduous or other forest habitats near water. They are also found and can breed in suburban and urban settings.	Low potential to occur on site within eucalyptus grove. Not observed during field surveys.
Agelaius tricolor	Tricolor blackbird	ST, SSC, BLMS, BBC	Tricolor blackbird colonies require nearby water, a suitable nesting substrate, and open-range foraging habitat composed of grassland, woodland, or agricultural cropland.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Aimophila ruficeps canescens	southern California rufous-crowned sparrow	WL	They are found on grass-covered hillsides, coastal sage scrub, and chaparral and often occur near the edges of the denser scrub and chaparral associations. Preference is shown for tracts of California sagebrush. Optimal habitat consists of sparse, low brush or grass, hilly slopes preferably interspersed with boulders and outcrops. The species may occur on steep grassy slopes without shrubs if rock outcrops are present. It is a very secretive species.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Ammodramus savannarum	Grasshopper sparrow	SSC	Grasshopper sparrows in California breed (and primarily apparently winter) on slopes and mesas containing grasslands of varying compositions. The grasshopper sparrow generally prefers moderately open grasslands and prairies with patchy bare ground. They also appear to use abandoned croplands that are dominated by grassy species. The species frequents dense, dry or well-drained grassland, especially native grassland with a mix of grasses and forbs for foraging and nesting and	None. No suitable habitat is found within the Project site. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			concealment. They require fairly continuous native grassland areas with occasional taller stems for breeding areas. They tend to avoid grassland areas with extensive shrub cover and the presence of native grasses is less important than the absence of trees.	
Athene cunicularia hypugaea	burrowing owl	SSC, BLMS, BCC	Burrowing owls are a year-round resident of California including habitats of open, dry grassland, and desert. They are generally restricted to mostly flat, open country with suitable nest sites. They use rodent or other burrows for roosting and nesting cover and acquire their burrows from either abandonment or eviction. Burrowing owls typically hunt from a perch.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Bombus crotchii	Crotch bumble bee	SCE	The crotch bumble bee inhabits open grassland and scrub habitats. This species occurs primarily in California, including the Mediterranean region, Pacific Coast, Western Desert, Great Valley, and adjacent foothills through most of southwestern California.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Campylorhychus brunneicapillus sandiegensis	Coastal cactus wren	SSC, FSS, BBC	Occurs almost exclusively in cactus (cholla and prickly pear) dominated coastal sage scrub.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Choeronycteris mexicana	Mexican long-tongued bat	SSC	The Mexican long-tongued bat preferred habitats include desert and montane riparian, desert succulent shrub, desert scrub, and pinyon-juniper habitats. Roosts in crevices, mines and bridges.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Coccyzus americanus occidentalis	western yellow-billed cuckoo	FT, SE, BLMS, FSS, BCC	This species is an uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in California. Formerly much more common and widespread throughout lowland California. Roosts and nests in densely foliaged, deciduous trees and shrubs in extensive thickets, particularly willows.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Coturnicops noveboracensis	Yellow rail	SSC, FSS, BBC	Yellow Rails occur in shallow marshes with fairly short vegetation. For breeding, taller emergent vegetation like cattails does not attract Yellow Rails, but they sometimes nest nearby, where water is shallower and	None. No suitable habitat is found within the Project site. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			vegetation shorter. They often nest among sedges and bulrushes. Because water levels change frequently in the prairies, nesting locations are not consistent in some areas from year to year. Migrating Yellow Rails turn up in wet meadows, shallow marshes, and agricultural fields with grassy cover or heavy stubble. Wintering Yellow Rails use shallow wetlands as they do in breeding areas, typically dominated by sedges, rushes, bulrushes, and grasses.	
Crotalus ruber	red-diamond rattlesnake	SSC, FSS	It can be found from the desert, through dense chaparral in the foothills (it avoids the mountains above around 4,000 feet), to warm inland mesas and valleys, all the way to the cool ocean shore. It is most commonly associated with heavy brush with large rocks or boulders. Dense chaparral in the foothills, cactus or boulder associated coastal sage scrub, oak and pine woodlands, and desert slope scrub associations are known to carry populations of the northern red-diamond rattlesnake, however, chamise and red shank associations may offer better structural habitat for refuges and food resources for this species than other habitats. They need rodent burrows, cracks in rocks or surface cover objects.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Elanus leucurus	White-tailed kite	Fully Protected, BLMS	Low elevation open grasslands, savannah-like habitats, agricultural areas, wetlands and oak woodlands. Dense canopies used for nesting and cover.	High. Suitable habitat is found within the Project site within the eucalyptus grove and ornamental trees. Furthermore, suitable foraging habitat occurs to the west of the site within the open field. Not observed during field surveys. However during the 2021 Breeding Season UCI Biologist observed a pair of white-tailed kites nesting in a western sycamore within the developed area of the Project.
Emys marmorata	western pond turtle	SCC, BLMS	Inhabits permanent or nearly permanent water below 1,830 meters (6000 feet) throughout California, west of the Sierra Cascade.	None. No suitable habitat is found within the Project site. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
Eremophila alpestris actia	California horned lark	WL	A year-long resident within the state and within a variety of open habitats, usually where trees and large shrubs are absent. They are not particular about the nature of the field, so long as it has very little vegetation. Range-wide, they breed in level or gently sloping short grass prairies, montane meadows, "bald" hills, open coastal plains, fallow grain fields, alkali flats, and rangelands. Within southern California, California horned larks breed primarily in open fields, (short) grasslands, and rangelands. Grasses, shrubs, forbs, rocks, litter, clods of soil, and other surface irregularities provide cover.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Eumops perotis californicus	western mastiff bat	SSC, BLMS	Western mastiff bats are found in a variety of habitats, such as semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub, and urban, but the species' distribution may be geomorphically determined, occurring primarily where there are significant rock features offering suitable roosting habitat. A cliff dwelling species, where maternity colonies of 30 to several hundred roost generally under exfoliating rock slabs and rock crevices along cliffs. Western mastiff bats can also be found in similar crevices in large boulders and buildings. When roosting in rock crevices they require a sizable drop from their roost in order to achieve flight. Western mastiff bats prefer deep crevices that are at least 15 or 20 feet above the ground. Foraging is concentrated around bodies of water but also includes coastal sage scrub, chaparral, and grassland habitats.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Icteria virens	yellow-breasted chat	SSC	In southern California they are primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. Breeding habitat must be dense to provide	Low Potential to occur onsite. Suitable habitat exists onsite within the California rose stand. Not observed during the field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			shade and concealment. It winters south to Central America.	
Laterallus jamaicensis coturniculus	California black rail	ST, BLMS, BBC, Fully Protected	Black Rails nest in marshes and wet meadows across North America, including riparian marshes, coastal prairies, saltmarshes, and impounded wetlands. All of the habitats have stable shallow water. Nests are primarily made of southern cattail or spikerush and are elevated above the mud substrate in clumps of vegetation. Black rails have also been known to nest on top of a mat of dead vegetation from the previous years' growth.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Passerculus sandwichensis beldingi	Belding's savannah sparrow	SE	A year-long resident within coastal salt marshes of southern California. Belding's are ecologically associated with dense pickleweed, particularly Salicornia virginica, within which most nests are found. Breeding territories can be very small and they nest semicolonially or locally concentrated within a larger block of habitat, all of which may appear generally suitable. They can be difficult to count accurately since they are secretive and forage throughout a marsh, often well away from nesting sites.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Perognathus longimembris pacificus	Pacific pocket mouse	FE, SSC	Pacific pocket mouse is a small, burrowing rodent that primarily feeds on seeds and is associated with fine grain, sandy substrates in coastal strand, coastal dunes, river alluvium and coastal sage scrub habitats within approximately 2.5 miles of the ocean in southern California.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Phrynosoma blainvillii	coast horned lizard	SSC, BLMS	Occurs in a variety of vegetation types including coastal sage scrub, chaparral, annual grassland, oak woodland and riparian woodlands.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Polioptila californica californica	coastal California gnatcatcher	FT, SSC	A non-migratory, permanent resident of coastal sage scrub habitat, which is a broad category of vegetation that includes the following plant communities: Ventura coastal sage scrub, Diegan coastal sage scrub, maritime succulent scrub, Riversidean sage scrub, Riversidean	None. No suitable habitat is found within the Project site. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
			alluvial fan sage scrub, southern coastal bluff scrub, and coastal sage-chaparral scrub. They also use chaparral, grassland and riparian habitats next to coastal sage scrub, but these habitats are used dispersal and foraging. They avoid nesting on steep slopes.	
Rallus obsoletus levipes	Light-footed Ridgway's rail	FE, SE, Fully Protected	The light-footed Ridgway's rail uses southern California coastal salt marshes, lagoons, and their maritime environs. The birds nest in the lower littoral zone of coastal salt marshes where dense stands of cordgrass are present. They require shallow water and mudflats for foraging, with adjacent higher vegetation for cover during high water.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Sorex ornatus salicornicus	southern California saltmarsh shrew	SSC	The Southern California salt marsh shrew is confined to coastal salt marshes in Los Angeles, Orange, and Ventura counties. Historically, it was reported from Point Mugu marsh in Ventura County south to the vicinity of Naples in Los Angeles County.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Spea hammondii	western spadefoot	SSC, BLMS	May be found in coastal sage scrub, open chaparral, pine-oak woodlands and grassland habitats, but is most common in grasslands with vernal pools or mixed grassland/coastal sage scrub areas. Within these habitats, they require rain pools/vernal pools in which to reproduce and that persist with more than three weeks of standing water in which to metamorphose successfully. They can also breed in slow-moving streams (e.g., areas flooded by intermittent streams). Water breeding sites must lack fish, bullfrogs, and crayfish in order for to successfully reproduce and metamorphose. They estivates in sandy, gravelly soil in upland habitats adjacent to potential breeding sites in burrows approximating 1 meter in depth.	None. No suitable habitat is found within the Project site. Not observed during field surveys.
Sternula antillarum browni	California least tern	FE, SE, Fully Protected	California least terns live along the coast. They nest on open beaches kept free of vegetation by the tide. The typical colony size is 25 pair.	None. No suitable habitat is found within the Project site. Not observed during field surveys.

Scientific Name	Common Name	Status	General Habitat Description	Potential For Occurrence
Vireo bellii pusillus	least Bell's vireo	FE, SE	Least Bell's vireos primarily occupy riverine riparian habitats that typically feature dense cover within 1-2 m of the ground and a dense, stratified canopy. Typically, it is associated with southern willow scrub, cottonwood-willow forest, mule fat scrub, sycamore alluvial woodland, coast live oak riparian forest, arroyo willow riparian forest, or mesquite in desert localities. It uses habitat which is limited to the immediate vicinity of water courses. 2,000 feet elevation in the interior. This species is generally restricted to major river systems in San Diego County.	None. No suitable habitat is found within the Project site. Not observed during field surveys.

Legend

Federal Endangered Species Act (ESA) Listing Codes: federal listing is pursuant to the Federal Endangered Species Act (ESA) of 1973, as amended. The official federal listing of Endangered and Threatened Animals is published in the Federal Register, 50 CFR 17.11.
FE = federally listed as endangered: any species, subspecies, or variety of plant or animal that is in danger of extinction throughout all or a significant portion of their range.
FT = federally listed as threatened: any species, subspecies, or variety of plant or animal that is considered likely to become endangered throughout all or a significant portion of its range within the foreseeable future.
FC = federal candidate for listing.
FPT = federally proposed threatened.

California Endangered Species Act (CESA) Listing Codes: state listing is pursuant to §2074.2 and §2075.5 (California Endangered Species Act of 1984) of the Fish and Game Code, relating to listing of Endangered, Threatened and Rare species of plants and animals. The official California listing of Endangered and Threatened animals is contained in the California Code of Regulations, Title 14, and Section 670.5.
SE = state listed as endangered: any species, subspecies, or variety of plant or animal that are in serious danger of becoming extinct throughout all, or a significant portion, of their range.
ST = state listed as threatened: any species, subspecies, or variety of plant or animal that, although not presently threatened with extinction, is likely to become an endangered species in the foreseeable future.
SCT = state candidate for listing as threatened.
SCE = state candidate for listing as endangered.

California Department of Fish and Wildlife (CDFW):
SSC = species of special concern: status applies to animals which 1) are declining at a rate that could result in listing, or 2) historically occurred in low numbers and known threats to their persistence currently exist. The CDFW has designated certain vertebrate species as "species of special concern" because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction.
Fully protected = animal species may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for

necessary scientific research and relocation of the bird species for the protection of livestock.
WL = watch list: these birds have been designated as "Taxa to Watch" in the *California Bird Species of Special Concern report* (Shuford and Gardali 2008). The report defines "Taxa to Watch" as those that are not on the current special concern list that (1) formerly were on the 1978 (Remsen 1978) or 1992 (CDFG 1992) special concern lists and are not currently listed as state threatened and endangered; (2) have been removed (delisted) from either the state or federal threatened and endangered lists (and remain on neither), or (3) are currently designated as "fully protected" in California.

United States Fish and Wildlife Service (USFWS):
BCC = USFWS bird of conservation concern: listed in the USFWS'S 2008 *Birds of Conservation Concern* report. The report identifies species, subspecies, and populations of all migratory non-game birds that, without additional conservation actions, are likely to become candidates for listing under the ESA. While all of the bird species included in the report are priorities for conservation action, the list makes no finding with regard to whether they warrant consideration for ESA listing.

United States Forest Service (USFS):
FSS = Forest Service sensitive: those plant and animal species identified by a Regional Forester that are not listed or proposed for listing under the ESA and for which population viability is a concern, as evidenced by: (a) significant current or predicted downward trends in population numbers or density or (b) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution."

United States Bureau of Land Management (BLM):
BLMS = BLM sensitive: those plant and animal species on BLM administered lands and that are (1) under status review by the USFWS/NMFS; or (2) whose numbers are declining so rapidly that federal listing my become necessary, or (3) with typically small and widely dispersed populations; or (4) those inhabiting ecological refugia or other specialized or unique habitats. BLM policy is to provide the same level of protection as USFWS candidate species.

California Department of Forestry and Fire Protection (CDF):
CDF: S = CDF sensitive: species is a California Department of Forestry and Fire Protection sensitive species. The Board of Forestry classifies as sensitive species those species that warrant special protection during timber operations.

Sources:

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- Amphibian species accounts (Amphibiaweb 2020).
- *California Bird Species of Special Concern*: *A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California* (Shuford and Gardali 2008).

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- Standard Common and Current Scientific Names (Center for North American Herpetology website [CNAH] website 2020).
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- Terrestrial Mammal Species of Special Concern in California (Bolster 1998).

APPENDIX C

Greenhouse Gas Assessment

Greenhouse Gas Emissions Assessment
University Hills Area 12 and LRDP Amendment Project
at the University of California, Irvine

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LIST OF ABBREVIATED TERMS

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

1 INTRODUCTION

This report documents the results of a Greenhouse Gas (GHG) Emissions Assessment completed for the University of California Irvine (UCI) University Hills Area 12 Project "Project" or "proposed Project"). The purpose of this GHG Emissions Assessment is to evaluate the potential construction and operational emissions associated with the proposed Project and determine the Project's level of impact on the environment.

1.1 Project Location

The Project is in Orange County (County), in the City of Irvine (City) within the UCI campus; see **Exhibit 1: Regional Vicinity**. The 9.8-acre Project site is located in UCI's South Campus to the south of the East Peltason Drive and Los Trancos Drive intersection; see **Exhibit 2: Site Vicinity**. Regional access to the Project site is provided via Interstate 405 (I-405) and State Route 73 (SR-73) located to the north and west, respectively. Local access to the Project site is provided via East Peltason Drive.

1.2 Project Description

The proposed Project would demolish the existing 100 faculty/staff multi-family residences within the Las Lomas apartment complex and construct approximately 220 dwelling units for UCI faculty/staff in two phases on the Project site; see **Exhibit 3: Conceptual Site Plan**. In addition, UCI is proposing to amend its existing 2007 Long Range Development Plan (LRDP) to accommodate the Project and increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. The proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP.

Project Construction and Phasing

Project construction is anticipated to occur in two phases. Phase 1 would be within the east portion of the Project site beginning in February 2022 and ending in September 2023. Phase 2 would be within the west side of the site beginning in July 2023 and ending in September 2025. Grading for the proposed improvements would require cut and fill to create building pads. The Project is anticipated to require approximately 24,562 cubic yards (CY) of excavation with 2,982 CY of soil export. Final grading plans would be approved by the UCI Building Official before Grading Permit issuance. All infrastructure (i.e., storm drain, water, wastewater, dry utilities, and street improvements) would be installed during grading. For purposes of this environmental analysis, opening year is assumed to be 2023 since Phase 1 will be open in September 2023.

Exhibit 1: Regional Vicinity

Exhibit 2: Site Vicinity

Source: Google Earth, 2021

Exhibit 3: Conceptual Site Plan

Source: Ridge Landscape Architects, *Illustrative Site Plan*, 2021.

2 ENVIRONMENTAL SETTING

2.1 Greenhouse Gases and Climate Change

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

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

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

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

Table 1: Description of Greenhouse Gases

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

Source: Compiled from U.S. EPA, *Overview of Greenhouse Gases*, April 11, 2018 (https://www.epa.gov/ghgemissions/overview-greenhouse-gases); U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017*, 2019; Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, 2007; National Research Council, Advancing the Science of Climate Change, 2010; U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, April 2010.

3 REGULATORY SETTING

3.1 Federal

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

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

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

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

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

In 2010, an Executive Memorandum was issued directing the Department of Transportation, Department of Energy, EPA, and NHTSA to establish additional standards regarding fuel efficiency and GHG reduction, clean fuels, and advanced vehicle infrastructure. In response to this directive, the EPA and NHTSA proposed stringent, coordinated federal GHG and fuel economy standards for model years 2017–2025 light-duty vehicles. The proposed standards projected to achieve 163 grams per mile of CO_2 in model year

2025, on an average industry fleet-wide basis, which is equivalent to 54.5 miles per gallon if this level were achieved solely through fuel efficiency. The final rule was adopted in 2012 for model years 2017–2021, and NHTSA intends to set standards for model years 2022–2025 in a future rulemaking. On January 12, 2017, the EPA finalized its decision to maintain the current GHG emissions standards for model years 2022–2025 cars and light trucks. It should be noted that the EPA is currently proposing to freeze the vehicle fuel efficiency standards at their planned 2020 level (37 miles per gallon), canceling any future strengthening (currently 54.5 miles per gallon by 2026).

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

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

In 2018, the President and the U.S. EPA stated their intent to halt various federal regulatory activities to reduce GHG emission, including the phase two program. California and other states have stated their intent to challenge federal actions that would delay or eliminate GHG reduction measures and have committed to cooperating with other countries to implement global climate change initiatives. On September 27, 2019, the U.S. EPA and the NHTSA published the "Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program." (84 Fed. Reg. 51,310 (Sept. 27, 2019.) The Part One Rule revokes California's authority to set its own GHG emissions standards and set zero-emission vehicle mandates in California. On March 31, 2020, the U.S. EPA and NHTSA finalized rulemaking for SAFE Part Two sets CO_2 emissions standards and corporate average fuel economy (CAFE) standards for passenger vehicles and light duty trucks, covering model years 2021-2026.

3.2 State of California

California Air Resources Board

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

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation, such as the landmark Assembly Bill (AB) 32, *California Global Warming Solutions Act of 2006*, was specifically enacted to address GHG emissions.

Other legislation, such as Title 24 building efficiency standards and Title 20 appliance energy standards, were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

Assembly Bill (AB) 32 (California Global Warming Solutions Act of 2006). AB 32 instructs the CARB to develop and enforce regulations for the reporting and verification of statewide GHG emissions. AB 32 also directed CARB to set a GHG emissions limit based on 1990 levels, to be achieved by 2020. It set a timeline for adopting a scoping plan for achieving GHG reductions in a technologically and economically feasible manner.

CARB Scoping Plan. CARB adopted the Scoping Plan to achieve the goals of AB 32. The Scoping Plan establishes a framework for the measures that would be adopted to reduce California's GHG emissions. CARB determined that achieving the 1990 emissions level would require a reduction of GHG emissions of approximately 29 percent below what would otherwise occur in 2020 in the absence of new laws and regulations (referred to as "business-as-usual")[2]. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates early actions and additional GHG reduction measures by both CARB and the state's Climate Action Team, identifies additional measures to be pursued as regulations, and outlines the adopted role of a cap-and-trade program[3]. Additional development of these measures and adoption of appropriate regulations occurred through the end of 2013. Key elements of the Scoping Plan include:

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

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

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

- The California Sustainable Freight Action Plan was developed in 2016 and provides a vision for California's transition to a more efficient, more economically competitive, and less polluting freight transport system. This transition of California's freight transport system is essential to supporting the State's economic development in coming decades while reducing pollution.
- CARB's Mobile Source Strategy demonstrates how the State can simultaneously meet air quality standards, achieve GHG emission reduction targets, decrease health risk from transportation emissions, and reduce petroleum consumption over the next fifteen years. The mobile Source Strategy includes increasing ZEV buses and trucks.

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

CARB adopted the first major update to the Scoping Plan on May 22, 2014. The updated Scoping Plan summarizes the most recent science related to climate change, including anticipated impacts to California and the levels of GHG emissions reductions necessary to likely avoid risking irreparable damage. It identifies the actions California has already taken to reduce GHG emissions and focuses on areas where further reductions could be achieved to help meet the 2020 target established by AB 32. By 2016, California had reduced GHG emissions below 1990 levels, achieving AB 32's 2020 goal four years ahead of schedule.

In 2016, the Legislature passed Senate Bill (SB) 32, which codifies a 2030 GHG emissions reduction target of 40 percent below 1990 levels. With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017 CARB adopted a second update to the Scoping Plan[4]. The 2017 Scoping Plan details how the State will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and support the Clean Power Plan and other Federal actions.

Senate Bill (SB) 32 (California Global Warming Solutions Act of 2006: Emissions Limit). Signed into law in September 2016, SB 32 codifies the 2030 GHG reduction target in Executive Order B-30-15 (40 percent below 1990 levels by 2030). The bill authorizes CARB to adopt an interim GHG emissions level target to be achieved by 2030. CARB also must adopt rules and regulations in an open public process to achieve the maximum, technologically feasible, and cost-effective GHG reductions.

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

With SB 32, the Legislature passed companion legislation, AB 197, which provides additional direction for developing the Scoping Plan. On December 14, 2017 CARB adopted a second update to the Scoping Plan[5]. The 2017 Scoping Plan details how the state will reduce GHG emissions to meet the 2030 target set by Executive Order B-30-15 and codified by SB 32. Other objectives listed in the 2017 Scoping plan are to provide direct GHG emissions reductions; support climate investment in disadvantaged communities; and, support the Clean Power Plan and other Federal actions.

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

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

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

SB 1078 and SBX1-2 (Renewable Electricity Standards). SB 1078 (2002) required California to generate 20 percent of its electricity from renewable energy by 2017. In 2005, SB 107 accelerated the due date of the 20 percent mandate to 2010 instead of 2017. These mandates apply directly to investor-owned utilities. On November 17, 2008, Executive Order S-14-08 established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Executive Order S-21-09 also directed CARB to adopt a regulation by July 31, 2010, requiring the state's load serving entities to meet a 33 percent renewable energy target by 2020. CARB approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23. SB X1-2 (2011) codified the 33 percent by 2020 goal.

[5] California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf, accessed June 3, 2020.

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

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

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

SB 100 (California Renewables Portfolio Standard Program: Emissions of Greenhouse Gases). Signed into Law in September 2018, SB 100 increased California's renewable electricity portfolio from 50 to 60 percent by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

Executive Orders Related to GHG Emissions

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

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

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

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

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

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

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

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

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

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

Executive Order N-79-20. Signed in September 2020, Executive Order N-79-20 establishes as a goal that where feasible, all new passenger cars and trucks, as well as all drayage/cargo trucks and off-road vehicles and equipment, sold in California, will be zero-emission by 2035. The executive order sets a similar goal requiring that all medium and heavy-duty vehicles will be zero-emission by 2045 where feasible. It also directs CARB to develop and propose rulemaking for passenger vehicles and trucks, medium-and heavy-duty fleets where feasible, drayage trucks, and off-road vehicles and equipment "requiring increasing

volumes" of new zero emission vehicles (ZEVs) "towards the target of 100 percent." The executive order directs the California Environmental Protection Agency, the California Geologic Energy Management Division (CalGEM), and the California Natural Resources Agency to transition and repurpose oil production facilities with a goal toward meeting carbon neutrality by 2045. Executive Order N-79-20 builds upon the CARB Advanced Clean Trucks regulation, which was adopted by CARB in July 2020.

California Regulations and Building Codes

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

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

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

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

3.3 Regional

South Coast Air Quality Management District Thresholds

The South Coast Air Quality Management District (SCAQMD) formed a GHG California Environmental Quality Act (CEQA) Significance Threshold Working Group to provide guidance to local lead agencies on determining significance for GHG emissions in their CEQA documents. As of the last Working Group

meeting (Meeting #15) held in September 2010, the SCAQMD is proposing to adopt a tiered approach for evaluating GHG emissions for development projects where SCAQMD is not the lead agency.

With the tiered approach, the Project is compared with the requirements of each tier sequentially and would not result in a significant impact if it complies with any tier. Tier 1 excludes projects that are specifically exempt from SB 97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. The SCAQMD has adopted a threshold of 10,000 metric tons of CO_2e ($MTCO_2e$) per year for industrial projects and a 3,000 $MTCO_2e$ threshold was proposed for non-industrial projects but has not been adopted. During Working Group Meeting #7 it was explained that this threshold was derived using a 90 percent capture rate of a large sampling of industrial facilities. During Meeting #8, the Working Group defined industrial uses as production, manufacturing, and fabrication activities or storage and distribution (e.g., warehouse, transfer facility, etc.). The Working Group indicated that the 10,000 $MTCO_2e$ per year threshold applies to both emissions from construction and operational phases plus indirect emissions (electricity, water use, etc.). The SCAQMD concluded that projects with emissions less than the screening threshold would not result in a significant cumulative impact.

Southern California Association of Governments

On September 3, 2020, SCAG's Regional Council adopted Connect SoCal (2020 - 2045 Regional Transportation Plan/Sustainable Communities Strategy [2020 RTP/SCS]). The RTP/SCS charts a course for closely integrating land use and transportation so that the region can grow smartly and sustainably. The strategy was prepared through a collaborative, continuous, and comprehensive process with input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The RTP/SCS is a long-range vision plan that balances future mobility and housing needs with economic, environmental, and public health goals. The SCAG region strives toward sustainability through integrated land use and transportation planning. The SCAG region must achieve specific federal air quality standards and is required by state law to lower regional GHG emissions.

3.4 University of California

University of California Policy on Sustainable Practices

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

University of California Carbon Neutrality Initiative

In November 2013, UC announced the Carbon Neutrality Initiative, which commits the UC to achieving climate neutrality from Scope 1 and 2 sources by 2025 and progressing toward climate neutrality from specific Scope 3 sources by 2050 or sooner. Scope 1 emission sources include direct emissions from sources owned or controlled by the UC, such as emissions from stationary combustion, process emissions, and fugitive emissions; while Scope 2 sources include indirect emissions from purchased electricity and purchased cogeneration for heating or cooling. Scope 3 sources include emissions from all other sources that occur as a result of university operations but occur from sources not owned or controlled. UC is

improving its energy efficiency, developing new sources of renewable energy and enacting a range of related strategies to cut carbon emissions. To help in the implementation of this initiative, UC formed the Global Climate Leadership Council (GCLC) in 2014 to advise UC leadership and to "connect carbon neutrality to UC's teaching, research, and public service mission."

Second Nature Carbon Commitment

UC is a signatory of Second Nature's Carbon Commitment, formerly known as the American College and University President's Climate Commitment (ACUPCC). This commitment focuses on reduction of GHG emissions with the goal of reaching carbon neutrality as soon as possible.

Energy Services Unit

The UC Energy Services Unit (ESU) has established projects and programs to provide utility-scale supply of renewable electricity and biomethane to support UC's sustainability goals. These efforts include investment in the development of 80 megawatts (MW) of solar energy supply by 2020 to provide long term sources of renewable power and development of 17 million therms of biomethane to provide renewable fuel to partially replace natural gas combustion on campuses. As a result, the ESU is greening the power supply to UC campuses with a goal of 100 percent GHG-free power supply to UC campuses that are served by the ESU under direct access.

UC Irvine Climate Action Plan

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

UC Irvine Long Range Development Plan

The UC Irvine Long Range Development Plan (LRDP), adopted in 2007, provides the comprehensive framework for the physical development of the UCI campus and is the primary planning document for the campus. As a general land use plan, the LRDP does not guide enrollment decisions or implementation of capital projects that could impact the on-campus population. The LRDP generally outlines the physical development needed to meet projected demand based on near-term enrollment projections. The Infrastructure Element outlines the expansion of utility infrastructure required to meet the program needs identified in the LRDP. The element acknowledges UCI's commitment to environmental stewardship and its goal to reduce dependence on non-renewable energy sources. Key planning objectives for the Infrastructure Element include:

- Adopt efficient, "green" energy systems to conserve resources, manage energy costs, and promote environmentally beneficial practices.

4 SIGNIFICANCE CRITERIA AND METHODOLOGY

4.1 Thresholds and significant criteria

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

- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance; or

- Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHGs.

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

UCI has not adopted project-specific significance thresholds. For the proposed Project, the SCAQMD's proposed 3,000 $MTCO_2e$ annual non-industrial screening threshold is used as the significance threshold, in addition to the qualitative thresholds of significance set forth below from CEQA Guidelines Appendix G Section VII.

The 3,000 $MTCO_2e$/yr screening threshold represents a 90 percent capture rate (i.e., this threshold captures projects that represent approximately 90 percent of GHG emissions from new sources). The 3,000 $MTCO_2e$/year value is typically used in defining small projects that are considered less than significant.[6]

4.2 Methodology

The Project's construction and operational emissions were calculated using the California Emissions Estimator Model version 2020.4.0 (CalEEMod). Details of the modeling assumptions and emission factors are provided in **Appendix A: Greenhouse Gas Emissions Data**. For construction, CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and

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

construction worker trips. The Project's construction-related GHG emissions were forecasted based on the proposed construction schedule and applying the mobile-source and fugitive dust emissions factors derived from CalEEMod. The Project's construction-related GHG emissions would be generated from off-road construction equipment, on-road hauling and vendor (material delivery) trucks, and worker vehicles. The Project's operations-related GHG emissions would be generated by vehicular traffic, area sources (e.g., landscaping maintenance, consumer products), electrical generation, natural gas consumption, water supply and wastewater treatment, and solid waste.

5 POTENTIAL IMPACTS AND MITIGATION

5.1 Greenhouse Gas Emissions

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

Short-Term Construction Greenhouse Gas Emissions

The proposed Project would result in direct GHG emissions from construction-related activities. The duration of construction activities associated with the proposed Project are estimated to last up to 44 months. The Project is anticipated to require approximately 24,562 CY of excavation with 2,982 cubic CY of soil export. Construction-related emissions were calculated using CalEEMod, which is designed to model emissions for land use development projects, based on typical construction requirements. The approximate daily GHG emissions generated by construction equipment utilized to build the proposed Project are included in **Table 2: Construction-Related Greenhouse Gas Emissions**.

Table 2: Construction-Related Greenhouse Gas Emissions

Category	$MTCO_2e$
Construction Year 1 (2022)	566
Construction Year 2 (2023)	602
Construction Year 3 (2024)	600
Construction Year 4 (2025)	129
Total Construction Emissions	1,897
30-Year Amortized Construction	63

Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.

As shown in **Table 2**, Project total construction-related activities would generate approximately 1,897 $MTCO_2e$ of GHG emissions over the course of construction. Construction GHG emissions are typically summed and amortized over the Project's lifetime (assumed to be 30 years), then added to the operational emissions[7]. The amortized Project emissions would be 63.23 $MTCO_2e$ per year. Once construction is complete, the generation of construction-related GHG emissions would cease.

Long-Term Operational Greenhouse Gas Emissions

Operational or long-term emissions would occur over the proposed Project's life. The Project's operational GHG emissions would result from direct emissions such as Project-generated vehicular traffic, on-site combustion of natural gas, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power, the energy required to convey water to the Project site and wastewater from the Project site, the emissions associated with solid waste generated from the Project site, and any fugitive refrigerants from air

[7] The project lifetime is based on the standard 30-year assumption of the South Coast Air Quality Management District (South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13,* August 26, 2009).

conditioning or refrigerators. The Project's total operational GHG emissions are summarized in **Table 3: Project Greenhouse Gas Emissions**.[8]

Table 3: Project Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Construction Amortized Over 30 Years	63
Area Source	49
Energy	389
Mobile	2,247
Waste	51
Water and Wastewater	71
Total	**2,870**
SCAQMD Project Threshold	*3,000*
Exceeds Threshold?	**No**

Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.

As shown in **Table 3**, Project operational GHG emissions, combined with construction-related GHG emissions, would generate approximately 2,870 $MTCO_2e$ annually. The proposed Project would not exceed the SCAQMD GHG threshold of 3,000 $MTCO_2e$ per year, thus, Project-related GHG emissions would be less than significant, and no mitigation is required.

LRDP Amendment

The LRDP EIR determined that implementation of the LRDP would increase GHG emissions from construction and operations, particularly from vehicle operations. However, GHG emissions would be less than significant. As described above, although the Project proposes to amend the 2007 LRDP housing program to include additional faculty/staff housing units, the proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP. The Project would redevelop the site at a higher density than what currently exists on-site. Higher building densities across the campus would accommodate the LRDP Amendment's increased capacity. The LRDP amendment would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations.

The LRDP Amendment represents a small proportion of what was anticipated in the LRDP EIR and would not change the severity of impacts or require new mitigation measures. Therefore, no new impacts or a substantial increase in the severity of a previously identified significant impacts evaluated in the LRDP EIR would occur. Additionally, no new information of substantial importance that was not known and could not have been known at the time the LRDP EIR was certified is available that would change the significance determination in the LRDP EIR.

[8] It should be noted the energy emissions shown in **Table 3** include emissions reductions in compliance with the 2019 Title 24 Building Energy Efficiency Standards which require rooftop solar systems for new residential development.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

5.2 Greenhouse Gas Reduction Plan Compliance

Threshold 5.2 Would the Project conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions?

As discussed above, UCI's Sustainable Practices Policy establishes goals and policies to reduce GHG emissions from various sources at the UCI campus. In addition, the CAP in cooperation with AB 32 has guided an array of climate action protection strategies and projects to reduce UCI GHG emissions. The purpose of the CAP is to identify UCI's long-term vision and commitment to reduce its GHG emissions in support of UC SPP and campus sustainability goals. These commitments include reduction of GHG emissions to 1990 levels by the year 2020 (a reduction of approximately 49 percent from projected emissions), climate neutrality by the year 2025 (for on-site combustion of fossil fuels and purchased electricity), and climate neutrality by the year 2050 (for UCI commuters and university-funded air travel). The CAP does not contain project-specific GHG thresholds.

The proposed Project would be subject to the University of California Policy on Sustainable Practices. The policy includes goals in various areas of sustainable practices including green building design, clean energy, climate protection, sustainable transportation, sustainable building operations for campuses, zero waste, sustainable procurement, sustainable foodservices, sustainable water systems and sustainability on the UCI campus. It should be noted that while these areas of policy are applicable to new buildings and major renovations on the UCI campus, not all areas of the policy are applicable to housing projects. Specific to the proposed Project, all new buildings are required to outperform the California Building Code energy-efficiency standards (Title 24) by 20 percent, meet or exceed U.S. Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED) "Silver" standards or equivalent, utilize energy efficient lighting and appliances, reduce outdoor water use by 50 percent, and reduce commuting emissions through sustainable transportation programming. The Project would also not use natural gas for space and water heating if feasible. Accordingly, the Project will meet the 2020 California Building Standards Code. In addition, the project would be assessed by the Green Point Rating program and would earn a minimum of a "silver rating". The Project would also not conflict with any of the policy's sustainable practices, including campus-wide clean energy, energy efficiency, and renewable energy, and sustainable transportation.

The Project is subject to the practices in the UC Sustainable Practices Policy and the UCI CAP. Development of the Project would provide dwelling units for UCI faculty/staff on the Project site. The Project's GHG emissions (2,870 $MTCO_2e$ per year) would be below SCAQMD thresholds. While not included in the UCI CAP, the proposed Project is consistent with the climate protections goals and measures adopted in the CAP and would not conflict with any applicable plan, policy, or regulation of an agency adopted to reduce GHG emissions, including Title 24, AB 32, and SB 32. Therefore, Project impacts would be less than significant.

LRDP Amendment

The LRDP EIR identified various existing UCI emissions reductions programs, including alternative fuel use, green building programs, sustainable landscaping, shuttle programs, transportation demand

management programs, on-campus, housing, and waste prevention and recycling. Additional University of California reduction strategies include green building design for new buildings and renovations, clean energy standards, climate protection practices, sustainable transportation practices, sustainable operations, recycling and waste management, and environmentally preferable purchasing practices. Therefore, there would not be any new or substantially more severe environmental impacts.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

5.3 Cumulative Setting, Impacts, and Mitigation Measures

Cumulative Setting

Climate change is a global problem. GHGs are global pollutants, unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern. Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (approximately one day), GHGs have much longer atmospheric lifetimes of one year to several thousand years that allow them to be dispersed around the globe.

Cumulative Impacts and Mitigation Measures

It is generally the case that an individual project of the proposed Project's size and nature is of insufficient magnitude by itself to influence climate change or result in a substantial contribution to the global GHG inventory. GHG impacts are recognized as exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective. The additive effect of Project-related GHG emissions would not result in a reasonably foreseeable cumulatively considerable contribution to global climate change. In addition, the proposed Project as well as other cumulative related projects, would be subject to all applicable regulatory requirements, which would further reduce GHG emissions. As shown in **Table 3**, the proposed Project's GHG emissions would be less than significant. Additionally, as discussed above, the Project would be consistent with the UCI CAP. As a result, the Project would not conflict with any GHG reduction plans. Therefore, the Project's cumulative contribution of GHG emissions would be less than significant and the Project's cumulative GHG impacts would also be less than cumulatively considerable.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6 REFERENCES

1. California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* 2017.
2. Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis*, 2007.
3. Intergovernmental Panel on Climate Change, *Climate Change 2013: The Physical Science Basis, Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2013.
4. National Research Council, *Advancing the Science of Climate Change*, 2010.
5. Ridge Landscape Architects, *Illustrative Site Plan*, 2021.
6. Southern California Association of Governments, *Regional Transportation Plan/Sustainable Communities Strategy*, 2016.
7. South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13*, 2009.
8. Stantec, *UCI University Hills Area 12 Faculty Housing Project,* Traffic Study, 2021.
9. University of California, *Policy of Sustainable Practices*, 2018.
10. University of California, Irvine, *Climate Action Plan*, 2016.
11. U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017*, 2019.
12. U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, 2010.
13. U.S. EPA, *Overview of Greenhouse Gases*, 2018.

Appendix A

Greenhouse Gas Emissions Data

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

UCI Area 12 Faculty/Staff Housing (CalEEMod)

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	168.00	Space	1.51	67,200.00	0
City Park	0.22	Acre	0.22	9,583.20	0
Condo/Townhouse	220.00	Dwelling Unit	9.27	404,012.00	629

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2023
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	390.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - per site plan

Construction Phase - anticipated construction schedule

Demolition -

Grading -

Vehicle Trips - Per Traffic Study

Woodstoves - No woodfire places per SCAQMD rule

Construction Off-road Equipment Mitigation - SCAQMD Rule compliance

Water Mitigation -

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	15
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	50.00
tblConstructionPhase	NumDays	10.00	50.00
tblConstructionPhase	NumDays	30.00	70.00
tblConstructionPhase	NumDays	300.00	600.00
tblConstructionPhase	NumDays	20.00	80.00
tblConstructionPhase	NumDays	20.00	80.00
tblFireplaces	NumberWood	11.00	0.00
tblGrading	MaterialExported	0.00	2,982.00
tblLandUse	LandUseSquareFeet	220,000.00	404,012.00
tblLandUse	LotAcreage	13.75	9.27
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	8.14	9.00
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	6.28	9.00
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	7.32	9.00
tblWoodstoves	NumberCatalytic	11.00	0.00
tblWoodstoves	NumberNoncatalytic	11.00	0.00

2.0 Emissions Summary

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.3592	3.5155	2.8815	6.2800e-003	0.9707	0.1581	1.1287	0.4164	0.1463	0.5627	0.0000	559.5362	559.5362	0.1374	9.3300e-003	565.7524
2023	0.2793	2.0920	2.9050	6.6000e-003	0.3021	0.0932	0.3953	0.0809	0.0877	0.1686	0.0000	595.0766	595.0766	0.0815	0.0171	602.1951
2024	0.2639	1.9791	2.8678	6.5700e-003	0.3044	0.0826	0.3870	0.0815	0.0777	0.1592	0.0000	593.3267	593.3267	0.0813	0.0167	600.3405
2025	1.3326	0.4560	0.8065	1.4300e-003	0.0337	0.0214	0.0551	8.9800e-003	0.0199	0.0289	0.0000	127.5089	127.5089	0.0296	9.3000e-004	128.5264
Maximum	**1.3326**	**3.5155**	**2.9050**	**6.6000e-003**	**0.9707**	**0.1581**	**1.1287**	**0.4164**	**0.1463**	**0.5627**	**0.0000**	**595.0766**	**595.0766**	**0.1374**	**0.0171**	**602.1951**

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.3592	3.5155	2.8815	6.2800e-003	0.4120	0.1581	0.5701	0.1686	0.1463	0.3149	0.0000	559.5356	559.5356	0.1374	9.3300e-003	565.7519
2023	0.2793	2.0920	2.9050	6.6000e-003	0.2635	0.0932	0.3567	0.0714	0.0877	0.1591	0.0000	595.0762	595.0762	0.0815	0.0171	602.1947
2024	0.2639	1.9791	2.8678	6.5700e-003	0.2655	0.0826	0.3481	0.0720	0.0777	0.1497	0.0000	593.3264	593.3264	0.0813	0.0167	600.3402
2025	1.3326	0.4560	0.8065	1.4300e-003	0.0294	0.0214	0.0507	7.9100e-003	0.0199	0.0278	0.0000	127.5088	127.5088	0.0296	9.3000e-004	128.5263
Maximum	**1.3326**	**3.5155**	**2.9050**	**6.6000e-003**	**0.4120**	**0.1581**	**0.5701**	**0.1686**	**0.1463**	**0.3149**	**0.0000**	**595.0762**	**595.0762**	**0.1374**	**0.0171**	**602.1947**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.76**	**0.00**	**32.58**	**45.57**	**0.00**	**29.14**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**2-1-2022**	**4-30-2022**	0.9978	0.9978
2	**5-1-2022**	**7-31-2022**	1.2978	1.2978
3	**8-1-2022**	**10-31-2022**	1.1351	1.1351
4	**11-1-2022**	**1-31-2023**	0.6405	0.6405
5	**2-1-2023**	**4-30-2023**	0.5795	0.5795
6	**5-1-2023**	**7-31-2023**	0.5960	0.5960
7	**8-1-2023**	**10-31-2023**	0.5975	0.5975
8	**11-1-2023**	**1-31-2024**	0.5881	0.5881

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

9	**2-1-2024**	**4-30-2024**	0.5501	0.5501
10	**5-1-2024**	**7-31-2024**	0.5594	0.5594
11	**8-1-2024**	**10-31-2024**	0.5609	0.5609
12	**11-1-2024**	**1-31-2025**	0.5099	0.5099
13	**2-1-2025**	**4-30-2025**	0.3055	0.3055
14	**5-1-2025**	**7-31-2025**	1.1113	1.1113
15	**8-1-2025**	**9-30-2025**	0.2379	0.2379
		Highest	1.2978	1.2978

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	1.6648	0.0650	2.2879	3.7000e-004		0.0157	0.0157		0.0157	0.0157	0.0000	48.6158	48.6158	4.4400e-003	8.2000e-004	48.9721
Energy	0.0196	0.1673	0.0712	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	386.4836	386.4836	0.0200	5.5200e-003	388.6292
Mobile	0.9831	1.1436	10.2917	0.0238	2.5487	0.0164	2.5651	0.6803	0.0152	0.6955	0.0000	2,216.5025	2,216.5025	0.1338	0.0923	2,247.3487
Waste						0.0000	0.0000		0.0000	0.0000	20.5468	0.0000	20.5468	1.2143	0.0000	50.9037
Water						0.0000	0.0000		0.0000	0.0000	4.5475	51.4214	55.9689	0.4714	0.0116	71.1974
Total	**2.6674**	**1.3759**	**12.6509**	**0.0252**	**2.5487**	**0.0456**	**2.5943**	**0.6803**	**0.0445**	**0.7248**	**25.0942**	**2,703.0232**	**2,728.1175**	**1.8439**	**0.1102**	**2,807.0511**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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	1.6648	0.0650	2.2879	3.7000e-004		0.0157	0.0157		0.0157	0.0157	0.0000	48.6158	48.6158	4.4400e-003	8.2000e-004	48.9721
Energy	0.0196	0.1673	0.0712	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	386.4836	386.4836	0.0200	5.5200e-003	388.6292
Mobile	0.9831	1.1436	10.2917	0.0238	2.5487	0.0164	2.5651	0.6803	0.0152	0.6955	0.0000	2,216.5025	2,216.5025	0.1338	0.0923	2,247.3487
Waste						0.0000	0.0000		0.0000	0.0000	20.5468	0.0000	20.5468	1.2143	0.0000	50.9037
Water						0.0000	0.0000		0.0000	0.0000	3.6380	43.6838	47.3217	0.3773	9.2700e-003	59.5177
Total	**2.6674**	**1.3759**	**12.6509**	**0.0252**	**2.5487**	**0.0456**	**2.5943**	**0.6803**	**0.0445**	**0.7248**	**24.1847**	**2,695.2856**	**2,719.4703**	**1.7498**	**0.1079**	**2,795.3714**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.62**	**0.29**	**0.32**	**5.10**	**2.07**	**0.42**

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	2/1/2022	4/11/2022	5	50	
2	Site Preparation	Site Preparation	4/12/2022	6/20/2022	5	50	
3	Grading	Grading	6/21/2022	9/26/2022	5	70	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	9/27/2022	1/13/2025	5	600	
5	Paving	Paving	1/14/2025	5/5/2025	5	80	
6	Architectural Coating	Architectural Coating	5/1/2025	8/20/2025	5	80	

Acres of Grading (Site Preparation Phase): 75

Acres of Grading (Grading Phase): 210

Acres of Paving: 1.51

Residential Indoor: 818,124; Residential Outdoor: 272,708; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 4,032 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	487.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	373.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	191.00	36.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	38.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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					0.0527	0.0000	0.0527	7.9700e-003	0.0000	7.9700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0660	0.6430	0.5149	9.7000e-004		0.0311	0.0311		0.0289	0.0289	0.0000	84.9756	84.9756	0.0239	0.0000	85.5723
Total	**0.0660**	**0.6430**	**0.5149**	**9.7000e-004**	**0.0527**	**0.0311**	**0.0837**	**7.9700e-003**	**0.0289**	**0.0369**	**0.0000**	**84.9756**	**84.9756**	**0.0239**	**0.0000**	**85.5723**

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	9.8000e-004	0.0399	0.0107	1.5000e-004	4.1800e-003	2.9000e-004	4.4700e-003	1.1500e-003	2.7000e-004	1.4200e-003	0.0000	14.9364	14.9364	1.4200e-003	2.3900e-003	15.6849
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	1.1300e-003	8.5000e-004	0.0118	4.0000e-005	4.1200e-003	2.0000e-005	4.1400e-003	1.0900e-003	2.0000e-005	1.1100e-003	0.0000	3.2536	3.2536	8.0000e-005	8.0000e-005	3.2798
Total	**2.1100e-003**	**0.0407**	**0.0225**	**1.9000e-004**	**8.3000e-003**	**3.1000e-004**	**8.6100e-003**	**2.2400e-003**	**2.9000e-004**	**2.5300e-003**	**0.0000**	**18.1900**	**18.1900**	**1.5000e-003**	**2.4700e-003**	**18.9647**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

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					0.0195	0.0000	0.0195	2.9500e-003	0.0000	2.9500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0660	0.6430	0.5149	9.7000e-004		0.0311	0.0311		0.0289	0.0289	0.0000	84.9755	84.9755	0.0239	0.0000	85.5722
Total	**0.0660**	**0.6430**	**0.5149**	**9.7000e-004**	**0.0195**	**0.0311**	**0.0506**	**2.9500e-003**	**0.0289**	**0.0318**	**0.0000**	**84.9755**	**84.9755**	**0.0239**	**0.0000**	**85.5722**

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	9.8000e-004	0.0399	0.0107	1.5000e-004	3.7100e-003	2.9000e-004	3.9900e-003	1.0300e-003	2.7000e-004	1.3100e-003	0.0000	14.9364	14.9364	1.4200e-003	2.3900e-003	15.6849
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	1.1300e-003	8.5000e-004	0.0118	4.0000e-005	3.5800e-003	2.0000e-005	3.6000e-003	9.6000e-004	2.0000e-005	9.8000e-004	0.0000	3.2536	3.2536	8.0000e-005	8.0000e-005	3.2798
Total	**2.1100e-003**	**0.0407**	**0.0225**	**1.9000e-004**	**7.2900e-003**	**3.1000e-004**	**7.5900e-003**	**1.9900e-003**	**2.9000e-004**	**2.2900e-003**	**0.0000**	**18.1900**	**18.1900**	**1.5000e-003**	**2.4700e-003**	**18.9647**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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					0.4914	0.0000	0.4914	0.2526	0.0000	0.2526	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0793	0.8271	0.4924	9.5000e-004		0.0403	0.0403		0.0371	0.0371	0.0000	83.5985	83.5985	0.0270	0.0000	84.2744
Total	**0.0793**	**0.8271**	**0.4924**	**9.5000e-004**	**0.4914**	**0.0403**	**0.5317**	**0.2526**	**0.0371**	**0.2897**	**0.0000**	**83.5985**	**83.5985**	**0.0270**	**0.0000**	**84.2744**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3600e-003	1.0200e-003	0.0141	4.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	2.0000e-005	1.3400e-003	0.0000	3.9043	3.9043	1.0000e-004	1.0000e-004	3.9358
Total	**1.3600e-003**	**1.0200e-003**	**0.0141**	**4.0000e-005**	**4.9400e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**2.0000e-005**	**1.3400e-003**	**0.0000**	**3.9043**	**3.9043**	**1.0000e-004**	**1.0000e-004**	**3.9358**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

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					0.1821	0.0000	0.1821	0.0936	0.0000	0.0936	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0793	0.8271	0.4924	9.5000e-004		0.0403	0.0403		0.0371	0.0371	0.0000	83.5984	83.5984	0.0270	0.0000	84.2743
Total	**0.0793**	**0.8271**	**0.4924**	**9.5000e-004**	**0.1821**	**0.0403**	**0.2224**	**0.0936**	**0.0371**	**0.1307**	**0.0000**	**83.5984**	**83.5984**	**0.0270**	**0.0000**	**84.2743**

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	1.3600e-003	1.0200e-003	0.0141	4.0000e-005	4.3000e-003	3.0000e-005	4.3200e-003	1.1500e-003	2.0000e-005	1.1800e-003	0.0000	3.9043	3.9043	1.0000e-004	1.0000e-004	3.9358
Total	**1.3600e-003**	**1.0200e-003**	**0.0141**	**4.0000e-005**	**4.3000e-003**	**3.0000e-005**	**4.3200e-003**	**1.1500e-003**	**2.0000e-005**	**1.1800e-003**	**0.0000**	**3.9043**	**3.9043**	**1.0000e-004**	**1.0000e-004**	**3.9358**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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					0.3223	0.0000	0.3223	0.1279	0.0000	0.1279	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1269	1.3595	1.0165	2.1700e-003		0.0572	0.0572		0.0526	0.0526	0.0000	190.8711	190.8711	0.0617	0.0000	192.4144
Total	**0.1269**	**1.3595**	**1.0165**	**2.1700e-003**	**0.3223**	**0.0572**	**0.3795**	**0.1279**	**0.0526**	**0.1806**	**0.0000**	**190.8711**	**190.8711**	**0.0617**	**0.0000**	**192.4144**

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	7.5000e-004	0.0305	8.2000e-003	1.1000e-004	3.2000e-003	2.2000e-004	3.4200e-003	8.8000e-004	2.1000e-004	1.0900e-003	0.0000	11.4400	11.4400	1.0900e-003	1.8300e-003	12.0133
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	2.1100e-003	1.5900e-003	0.0219	7.0000e-005	7.6800e-003	4.0000e-005	7.7300e-003	2.0400e-003	4.0000e-005	2.0800e-003	0.0000	6.0733	6.0733	1.5000e-004	1.5000e-004	6.1223
Total	**2.8600e-003**	**0.0321**	**0.0301**	**1.8000e-004**	**0.0109**	**2.6000e-004**	**0.0112**	**2.9200e-003**	**2.5000e-004**	**3.1700e-003**	**0.0000**	**17.5133**	**17.5133**	**1.2400e-003**	**1.9800e-003**	**18.1356**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

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					0.1194	0.0000	0.1194	0.0474	0.0000	0.0474	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1269	1.3595	1.0165	2.1700e-003		0.0572	0.0572		0.0526	0.0526	0.0000	190.8709	190.8709	0.0617	0.0000	192.4142
Total	**0.1269**	**1.3595**	**1.0165**	**2.1700e-003**	**0.1194**	**0.0572**	**0.1766**	**0.0474**	**0.0526**	**0.1000**	**0.0000**	**190.8709**	**190.8709**	**0.0617**	**0.0000**	**192.4142**

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	7.5000e-004	0.0305	8.2000e-003	1.1000e-004	2.8400e-003	2.2000e-004	3.0600e-003	7.9000e-004	2.1000e-004	1.0000e-003	0.0000	11.4400	11.4400	1.0900e-003	1.8300e-003	12.0133
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	2.1100e-003	1.5900e-003	0.0219	7.0000e-005	6.6900e-003	4.0000e-005	6.7300e-003	1.8000e-003	4.0000e-005	1.8300e-003	0.0000	6.0733	6.0733	1.5000e-004	1.5000e-004	6.1223
Total	**2.8600e-003**	**0.0321**	**0.0301**	**1.8000e-004**	**9.5300e-003**	**2.6000e-004**	**9.7900e-003**	**2.5900e-003**	**2.5000e-004**	**2.8300e-003**	**0.0000**	**17.5133**	**17.5133**	**1.2400e-003**	**1.9800e-003**	**18.1356**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	0.0589	0.5387	0.5645	9.3000e-004		0.0279	0.0279		0.0263	0.0263	0.0000	79.9452	79.9452	0.0192	0.0000	80.4240
Total	**0.0589**	**0.5387**	**0.5645**	**9.3000e-004**		**0.0279**	**0.0279**		**0.0263**	**0.0263**	**0.0000**	**79.9452**	**79.9452**	**0.0192**	**0.0000**	**80.4240**

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	2.0500e-003	0.0584	0.0201	2.4000e-004	7.8300e-003	5.4000e-004	8.3700e-003	2.2600e-003	5.2000e-004	2.7800e-003	0.0000	23.3666	23.3666	1.3400e-003	3.3500e-003	24.3987
Worker	0.0199	0.0149	0.2064	6.2000e-004	0.0723	4.0000e-004	0.0727	0.0192	3.7000e-004	0.0196	0.0000	57.1716	57.1716	1.4100e-003	1.4300e-003	57.6325
Total	**0.0219**	**0.0733**	**0.2265**	**8.6000e-004**	**0.0802**	**9.4000e-004**	**0.0811**	**0.0215**	**8.9000e-004**	**0.0224**	**0.0000**	**80.5382**	**80.5382**	**2.7500e-003**	**4.7800e-003**	**82.0312**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

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	0.0589	0.5387	0.5645	9.3000e-004		0.0279	0.0279		0.0263	0.0263	0.0000	79.9451	79.9451	0.0192	0.0000	80.4239
Total	**0.0589**	**0.5387**	**0.5645**	**9.3000e-004**		**0.0279**	**0.0279**		**0.0263**	**0.0263**	**0.0000**	**79.9451**	**79.9451**	**0.0192**	**0.0000**	**80.4239**

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	2.0500e-003	0.0584	0.0201	2.4000e-004	6.9900e-003	5.4000e-004	7.5400e-003	2.0500e-003	5.2000e-004	2.5700e-003	0.0000	23.3666	23.3666	1.3400e-003	3.3500e-003	24.3987
Worker	0.0199	0.0149	0.2064	6.2000e-004	0.0629	4.0000e-004	0.0633	0.0169	3.7000e-004	0.0173	0.0000	57.1716	57.1716	1.4100e-003	1.4300e-003	57.6325
Total	**0.0219**	**0.0733**	**0.2265**	**8.6000e-004**	**0.0699**	**9.4000e-004**	**0.0709**	**0.0190**	**8.9000e-004**	**0.0198**	**0.0000**	**80.5382**	**80.5382**	**2.7500e-003**	**4.7800e-003**	**82.0312**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3462	301.3462	0.0717	0.0000	303.1383
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3462**	**301.3462**	**0.0717**	**0.0000**	**303.1383**

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	4.6400e-003	0.1718	0.0690	8.4000e-004	0.0295	8.4000e-004	0.0303	8.5000e-003	8.1000e-004	9.3100e-003	0.0000	83.8815	83.8815	4.9800e-003	0.0121	87.5955
Worker	0.0702	0.0502	0.7243	2.2600e-003	0.2726	1.4200e-003	0.2740	0.0724	1.3100e-003	0.0737	0.0000	209.8488	209.8488	4.8200e-003	5.0100e-003	211.4612
Total	**0.0748**	**0.2220**	**0.7933**	**3.1000e-003**	**0.3021**	**2.2600e-003**	**0.3043**	**0.0809**	**2.1200e-003**	**0.0830**	**0.0000**	**293.7304**	**293.7304**	**9.8000e-003**	**0.0171**	**299.0568**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

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	0.2045	1.8700	2.1117	3.5000e-003		0.0910	0.0910		0.0856	0.0856	0.0000	301.3458	301.3458	0.0717	0.0000	303.1380
Total	**0.2045**	**1.8700**	**2.1117**	**3.5000e-003**		**0.0910**	**0.0910**		**0.0856**	**0.0856**	**0.0000**	**301.3458**	**301.3458**	**0.0717**	**0.0000**	**303.1380**

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	4.6400e-003	0.1718	0.0690	8.4000e-004	0.0264	8.4000e-004	0.0272	7.7400e-003	8.1000e-004	8.5400e-003	0.0000	83.8815	83.8815	4.9800e-003	0.0121	87.5955
Worker	0.0702	0.0502	0.7243	2.2600e-003	0.2371	1.4200e-003	0.2386	0.0637	1.3100e-003	0.0650	0.0000	209.8488	209.8488	4.8200e-003	5.0100e-003	211.4612
Total	**0.0748**	**0.2220**	**0.7933**	**3.1000e-003**	**0.2635**	**2.2600e-003**	**0.2657**	**0.0714**	**2.1200e-003**	**0.0735**	**0.0000**	**293.7304**	**293.7304**	**9.8000e-003**	**0.0171**	**299.0568**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

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	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7223	303.7223	0.0718	0.0000	305.5179
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7223**	**303.7223**	**0.0718**	**0.0000**	**305.5179**

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	4.6100e-003	0.1726	0.0690	8.3000e-004	0.0297	8.9000e-004	0.0306	8.5700e-003	8.5000e-004	9.4200e-003	0.0000	83.2168	83.2168	5.0700e-003	0.0120	86.9195
Worker	0.0665	0.0454	0.6809	2.2100e-003	0.2747	1.3600e-003	0.2760	0.0730	1.2500e-003	0.0742	0.0000	206.3876	206.3876	4.4100e-003	4.7200e-003	207.9032
Total	**0.0712**	**0.2180**	**0.7499**	**3.0400e-003**	**0.3044**	**2.2500e-003**	**0.3066**	**0.0815**	**2.1000e-003**	**0.0836**	**0.0000**	**289.6044**	**289.6044**	**9.4800e-003**	**0.0167**	**294.8227**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2024

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	0.1928	1.7611	2.1179	3.5300e-003		0.0803	0.0803		0.0756	0.0756	0.0000	303.7220	303.7220	0.0718	0.0000	305.5175
Total	**0.1928**	**1.7611**	**2.1179**	**3.5300e-003**		**0.0803**	**0.0803**		**0.0756**	**0.0756**	**0.0000**	**303.7220**	**303.7220**	**0.0718**	**0.0000**	**305.5175**

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	4.6100e-003	0.1726	0.0690	8.3000e-004	0.0266	8.9000e-004	0.0274	7.7900e-003	8.5000e-004	8.6500e-003	0.0000	83.2168	83.2168	5.0700e-003	0.0120	86.9195
Worker	0.0665	0.0454	0.6809	2.2100e-003	0.2390	1.3600e-003	0.2403	0.0642	1.2500e-003	0.0654	0.0000	206.3876	206.3876	4.4100e-003	4.7200e-003	207.9032
Total	**0.0712**	**0.2180**	**0.7499**	**3.0400e-003**	**0.2655**	**2.2500e-003**	**0.2678**	**0.0720**	**2.1000e-003**	**0.0741**	**0.0000**	**289.6044**	**289.6044**	**9.4800e-003**	**0.0167**	**294.8227**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

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	6.1500e-003	0.0561	0.0724	1.2000e-004		2.3700e-003	2.3700e-003		2.2300e-003	2.2300e-003	0.0000	10.4364	10.4364	2.4500e-003	0.0000	10.4977
Total	**6.1500e-003**	**0.0561**	**0.0724**	**1.2000e-004**		**2.3700e-003**	**2.3700e-003**		**2.2300e-003**	**2.2300e-003**	**0.0000**	**10.4364**	**10.4364**	**2.4500e-003**	**0.0000**	**10.4977**

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	1.6000e-004	5.9000e-003	2.3600e-003	3.0000e-005	1.0200e-003	3.0000e-005	1.0500e-003	2.9000e-004	3.0000e-005	3.2000e-004	0.0000	2.8051	2.8051	1.8000e-004	4.1000e-004	2.9306
Worker	2.1600e-003	1.4100e-003	0.0220	7.0000e-005	9.4400e-003	4.0000e-005	9.4800e-003	2.5100e-003	4.0000e-005	2.5500e-003	0.0000	6.9168	6.9168	1.4000e-004	1.5000e-004	6.9656
Total	**2.3200e-003**	**7.3100e-003**	**0.0244**	**1.0000e-004**	**0.0105**	**7.0000e-005**	**0.0105**	**2.8000e-003**	**7.0000e-005**	**2.8700e-003**	**0.0000**	**9.7219**	**9.7219**	**3.2000e-004**	**5.6000e-004**	**9.8962**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2025

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	6.1500e-003	0.0561	0.0724	1.2000e-004		2.3700e-003	2.3700e-003		2.2300e-003	2.2300e-003	0.0000	10.4364	10.4364	2.4500e-003	0.0000	10.4977
Total	**6.1500e-003**	**0.0561**	**0.0724**	**1.2000e-004**		**2.3700e-003**	**2.3700e-003**		**2.2300e-003**	**2.2300e-003**	**0.0000**	**10.4364**	**10.4364**	**2.4500e-003**	**0.0000**	**10.4977**

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	1.6000e-004	5.9000e-003	2.3600e-003	3.0000e-005	9.1000e-004	3.0000e-005	9.4000e-004	2.7000e-004	3.0000e-005	3.0000e-004	0.0000	2.8051	2.8051	1.8000e-004	4.1000e-004	2.9306
Worker	2.1600e-003	1.4100e-003	0.0220	7.0000e-005	8.2100e-003	4.0000e-005	8.2500e-003	2.2000e-003	4.0000e-005	2.2500e-003	0.0000	6.9168	6.9168	1.4000e-004	1.5000e-004	6.9656
Total	**2.3200e-003**	**7.3100e-003**	**0.0244**	**1.0000e-004**	**9.1200e-003**	**7.0000e-005**	**9.1900e-003**	**2.4700e-003**	**7.0000e-005**	**2.5500e-003**	**0.0000**	**9.7219**	**9.7219**	**3.2000e-004**	**5.6000e-004**	**9.8962**

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EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2025

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	0.0366	0.3433	0.5831	9.1000e-004		0.0167	0.0167		0.0154	0.0154	0.0000	80.0770	80.0770	0.0259	0.0000	80.7245
Paving	1.9800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0386**	**0.3433**	**0.5831**	**9.1000e-004**		**0.0167**	**0.0167**		**0.0154**	**0.0154**	**0.0000**	**80.0770**	**80.0770**	**0.0259**	**0.0000**	**80.7245**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5100e-003	9.9000e-004	0.0154	5.0000e-005	6.5900e-003	3.0000e-005	6.6200e-003	1.7500e-003	3.0000e-005	1.7800e-003	0.0000	4.8285	4.8285	1.0000e-004	1.1000e-004	4.8626
Total	**1.5100e-003**	**9.9000e-004**	**0.0154**	**5.0000e-005**	**6.5900e-003**	**3.0000e-005**	**6.6200e-003**	**1.7500e-003**	**3.0000e-005**	**1.7800e-003**	**0.0000**	**4.8285**	**4.8285**	**1.0000e-004**	**1.1000e-004**	**4.8626**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2025

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	0.0366	0.3433	0.5831	9.1000e-004		0.0167	0.0167		0.0154	0.0154	0.0000	80.0769	80.0769	0.0259	0.0000	80.7244
Paving	1.9800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0386**	**0.3433**	**0.5831**	**9.1000e-004**		**0.0167**	**0.0167**		**0.0154**	**0.0154**	**0.0000**	**80.0769**	**80.0769**	**0.0259**	**0.0000**	**80.7244**

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	1.5100e-003	9.9000e-004	0.0154	5.0000e-005	5.7300e-003	3.0000e-005	5.7600e-003	1.5400e-003	3.0000e-005	1.5700e-003	0.0000	4.8285	4.8285	1.0000e-004	1.1000e-004	4.8626
Total	**1.5100e-003**	**9.9000e-004**	**0.0154**	**5.0000e-005**	**5.7300e-003**	**3.0000e-005**	**5.7600e-003**	**1.5400e-003**	**3.0000e-005**	**1.5700e-003**	**0.0000**	**4.8285**	**4.8285**	**1.0000e-004**	**1.1000e-004**	**4.8626**

3.7 Architectural Coating - 2025

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					
Archit. Coating	1.2734					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8300e-003	0.0458	0.0724	1.2000e-004		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	10.2130	10.2130	5.6000e-004	0.0000	10.2269
Total	**1.2802**	**0.0458**	**0.0724**	**1.2000e-004**		**2.0600e-003**	**2.0600e-003**		**2.0600e-003**	**2.0600e-003**	**0.0000**	**10.2130**	**10.2130**	**5.6000e-004**	**0.0000**	**10.2269**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8200e-003	2.5000e-003	0.0389	1.3000e-004	0.0167	8.0000e-005	0.0168	4.4300e-003	7.0000e-005	4.5000e-003	0.0000	12.2321	12.2321	2.4000e-004	2.7000e-004	12.3185
Total	**3.8200e-003**	**2.5000e-003**	**0.0389**	**1.3000e-004**	**0.0167**	**8.0000e-005**	**0.0168**	**4.4300e-003**	**7.0000e-005**	**4.5000e-003**	**0.0000**	**12.2321**	**12.2321**	**2.4000e-004**	**2.7000e-004**	**12.3185**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2025

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					
Archit. Coating	1.2734					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.8300e-003	0.0458	0.0724	1.2000e-004		2.0600e-003	2.0600e-003		2.0600e-003	2.0600e-003	0.0000	10.2130	10.2130	5.6000e-004	0.0000	10.2269
Total	**1.2802**	**0.0458**	**0.0724**	**1.2000e-004**		**2.0600e-003**	**2.0600e-003**		**2.0600e-003**	**2.0600e-003**	**0.0000**	**10.2130**	**10.2130**	**5.6000e-004**	**0.0000**	**10.2269**

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	3.8200e-003	2.5000e-003	0.0389	1.3000e-004	0.0145	8.0000e-005	0.0146	3.9000e-003	7.0000e-005	3.9700e-003	0.0000	12.2321	12.2321	2.4000e-004	2.7000e-004	12.3185
Total	**3.8200e-003**	**2.5000e-003**	**0.0389**	**1.3000e-004**	**0.0145**	**8.0000e-005**	**0.0146**	**3.9000e-003**	**7.0000e-005**	**3.9700e-003**	**0.0000**	**12.2321**	**12.2321**	**2.4000e-004**	**2.7000e-004**	**12.3185**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	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	0.9831	1.1436	10.2917	0.0238	2.5487	0.0164	2.5651	0.6803	0.0152	0.6955	0.0000	2,216.5025	2,216.5025	0.1338	0.0923	2,247.3487
Unmitigated	0.9831	1.1436	10.2917	0.0238	2.5487	0.0164	2.5651	0.6803	0.0152	0.6955	0.0000	2,216.5025	2,216.5025	0.1338	0.0923	2,247.3487

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse	1,980.00	1,980.00	1980.00	6,765,961	6,765,961
Parking Lot	0.00	0.00	0.00		
Total	1,980.00	1,980.00	1,980.00	6,765,961	6,765,961

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Parking Lot	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942
Condo/Townhouse	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942
Parking Lot	0.544795	0.058861	0.186903	0.129401	0.024381	0.006522	0.014242	0.004855	0.000656	0.000385	0.024332	0.000723	0.003942

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	192.7091	192.7091	0.0163	1.9700e-003	193.7032
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	192.7091	192.7091	0.0163	1.9700e-003	193.7032
NaturalGas Mitigated	0.0196	0.1673	0.0712	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.7745	193.7745	3.7100e-003	3.5500e-003	194.9260
NaturalGas Unmitigated	0.0196	0.1673	0.0712	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.7745	193.7745	3.7100e-003	3.5500e-003	194.9260

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	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
Condo/Townhouse	3.6312e+006	0.0196	0.1673	0.0712	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.7745	193.7745	3.7100e-003	3.5500e-003	194.9260
Parking Lot	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
Total		**0.0196**	**0.1673**	**0.0712**	**1.0700e-003**		**0.0135**	**0.0135**		**0.0135**	**0.0135**	**0.0000**	**193.7745**	**193.7745**	**3.7100e-003**	**3.5500e-003**	**194.9260**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	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
Condo/Townhouse	3.6312e+006	0.0196	0.1673	0.0712	1.0700e-003		0.0135	0.0135		0.0135	0.0135	0.0000	193.7745	193.7745	3.7100e-003	3.5500e-003	194.9260
Parking Lot	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
Total		**0.0196**	**0.1673**	**0.0712**	**1.0700e-003**		**0.0135**	**0.0135**		**0.0135**	**0.0135**	**0.0000**	**193.7745**	**193.7745**	**3.7100e-003**	**3.5500e-003**	**194.9260**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	1.06311e+006	188.5379	0.0159	1.9300e-003	189.5105
Parking Lot	23520	4.1712	3.5000e-004	4.0000e-005	4.1927
Total		**192.7091**	**0.0163**	**1.9700e-003**	**193.7032**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	1.06311e+006	188.5379	0.0159	1.9300e-003	189.5105
Parking Lot	23520	4.1712	3.5000e-004	4.0000e-005	4.1927
Total		**192.7091**	**0.0163**	**1.9700e-003**	**193.7032**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	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	1.6648	0.0650	2.2879	3.7000e-004		0.0157	0.0157		0.0157	0.0157	0.0000	48.6158	48.6158	4.4400e-003	8.2000e-004	48.9721
Unmitigated	1.6648	0.0650	2.2879	3.7000e-004		0.0157	0.0157		0.0157	0.0157	0.0000	48.6158	48.6158	4.4400e-003	8.2000e-004	48.9721

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	0.1273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.4643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	4.5400e-003	0.0388	0.0165	2.5000e-004		3.1300e-003	3.1300e-003		3.1300e-003	3.1300e-003	0.0000	44.9056	44.9056	8.6000e-004	8.2000e-004	45.1725
Landscaping	0.0686	0.0262	2.2714	1.2000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	3.7102	3.7102	3.5700e-003	0.0000	3.7996
Total	**1.6648**	**0.0650**	**2.2879**	**3.7000e-004**		**0.0157**	**0.0157**		**0.0157**	**0.0157**	**0.0000**	**48.6158**	**48.6158**	**4.4300e-003**	**8.2000e-004**	**48.9721**

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	0.1273					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.4643					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	4.5400e-003	0.0388	0.0165	2.5000e-004		3.1300e-003	3.1300e-003		3.1300e-003	3.1300e-003	0.0000	44.9056	44.9056	8.6000e-004	8.2000e-004	45.1725
Landscaping	0.0686	0.0262	2.2714	1.2000e-004		0.0126	0.0126		0.0126	0.0126	0.0000	3.7102	3.7102	3.5700e-003	0.0000	3.7996
Total	**1.6648**	**0.0650**	**2.2879**	**3.7000e-004**		**0.0157**	**0.0157**		**0.0157**	**0.0157**	**0.0000**	**48.6158**	**48.6158**	**4.4300e-003**	**8.2000e-004**	**48.9721**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	47.3217	0.3773	9.2700e-003	59.5177
Unmitigated	55.9689	0.4714	0.0116	71.1974

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.262126	0.5165	4.0000e-005	1.0000e-005	0.5191
Condo/Townhouse	14.3339 / 9.03658	55.4524	0.4714	0.0116	70.6782
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**55.9689**	**0.4714**	**0.0116**	**71.1974**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.246136	0.4850	4.0000e-005	0.0000	0.4875
Condo/Townhouse	11.4671 / 8.48535	46.8368	0.3773	9.2600e-003	59.0302
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**47.3217**	**0.3773**	**9.2600e-003**	**59.5177**

8.0 Waste Detail

8.1 Mitigation Measures Waste

UCI Area 12 Faculty/Staff Housing (CalEEMod) - Orange County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.5468	1.2143	0.0000	50.9037
Unmitigated	20.5468	1.2143	0.0000	50.9037

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.02	4.0600e-003	2.4000e-004	0.0000	0.0101
Condo/Townhouse	101.2	20.5427	1.2140	0.0000	50.8936
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**20.5468**	**1.2143**	**0.0000**	**50.9037**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.02	4.0600e-003	2.4000e-004	0.0000	0.0101
Condo/Townhouse	101.2	20.5427	1.2140	0.0000	50.8936
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**20.5468**	**1.2143**	**0.0000**	**50.9037**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

11.0 Vegetation

APPENDIX D

Acoustical Assessment

Acoustical Assessment
University Hills Area 12 and LRDP Amendment Project
at the University of California, Irvine

Prepared by:

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LIST OF ABBREVIATED TERMS

ADT	average daily traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CNEL	community equivalent noise level
CY	cubic yards
dB	decibel
dBA	A-weighted sound level
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
ft	foot/feet
FTA	Federal Transit Administration
GSF	gross-square-foot
HVAC	heating ventilation and air conditioning
Hz	hertz
IMC	Irvine Municipal Code
in/sec	inches per second
L_{dn}	day-night noise level
L_{eq}	equivalent noise level
L_{max}	maximum noise level
L_{min}	minimum noise level
LRDP	Long Range Development Plan
µPa	micropascals
mph	miles per hour
NBMC	Newport Beach Municipal Code
PPV	peak particle velocity
RMS	root mean square
UCI	University of California, Irvine

1 INTRODUCTION

This report documents the results of an Acoustical Assessment prepared for the University of California Irvine (UCI) University Hills Area 12 Project ("Project" or "proposed Project"). The purpose of this Acoustical Assessment is to evaluate the potential operational noise levels associated with the proposed Project and determine the level of impact the Project would have on the environment.

1.1 Project Location

The Project is in Orange County (County), in the City of Irvine (City) within the UCI campus; see **Exhibit 1: Regional Vicinity**. The 9.8-acre Project site is located in UCI's South Campus to the south of the East Peltason Drive and Los Trancos Drive intersection; see **Exhibit 2: Site Vicinity**. Regional access to the Project site is provided via Interstate 405 and State Route 73 located to the north and west, respectively. Local access to the Project site is provided via East Peltason Drive.

1.2 Project Description

The proposed Project would demolish the existing 100 faculty/staff multi-family residences within the Las Lomas apartment complex and construct approximately 220 dwelling units for UCI faculty/staff in two phases on the Project site; see **Exhibit 3: Conceptual Site Plan**. In addition, UCI is proposing to amend its existing 2007 Long Range Development Plan (LRDP) to accommodate the Project and increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. The proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP.

Project Construction and Phasing

Project construction is anticipated to occur in two phases. Phase 1 would be within the east portion of the Project site beginning in February 2022 and ending in September 2023. Phase 2 would be within the west side of the site beginning in July 2023 and ending in September 2025. Grading for the proposed improvements would require cut and fill to create building pads. The Project is anticipated to require approximately 24,562 cubic yards (CY) of excavation with 2,982 CY of soil export. Final grading plans would be approved by the UCI Building Official before Grading Permit issuance. All infrastructure (i.e., storm drain, water, wastewater, dry utilities, and street improvements) would be installed during grading. For purposes of this environmental analysis, opening year is assumed to be 2023 since Phase 1 will be open in September 2023.

Exhibit 1: Regional Vicinity

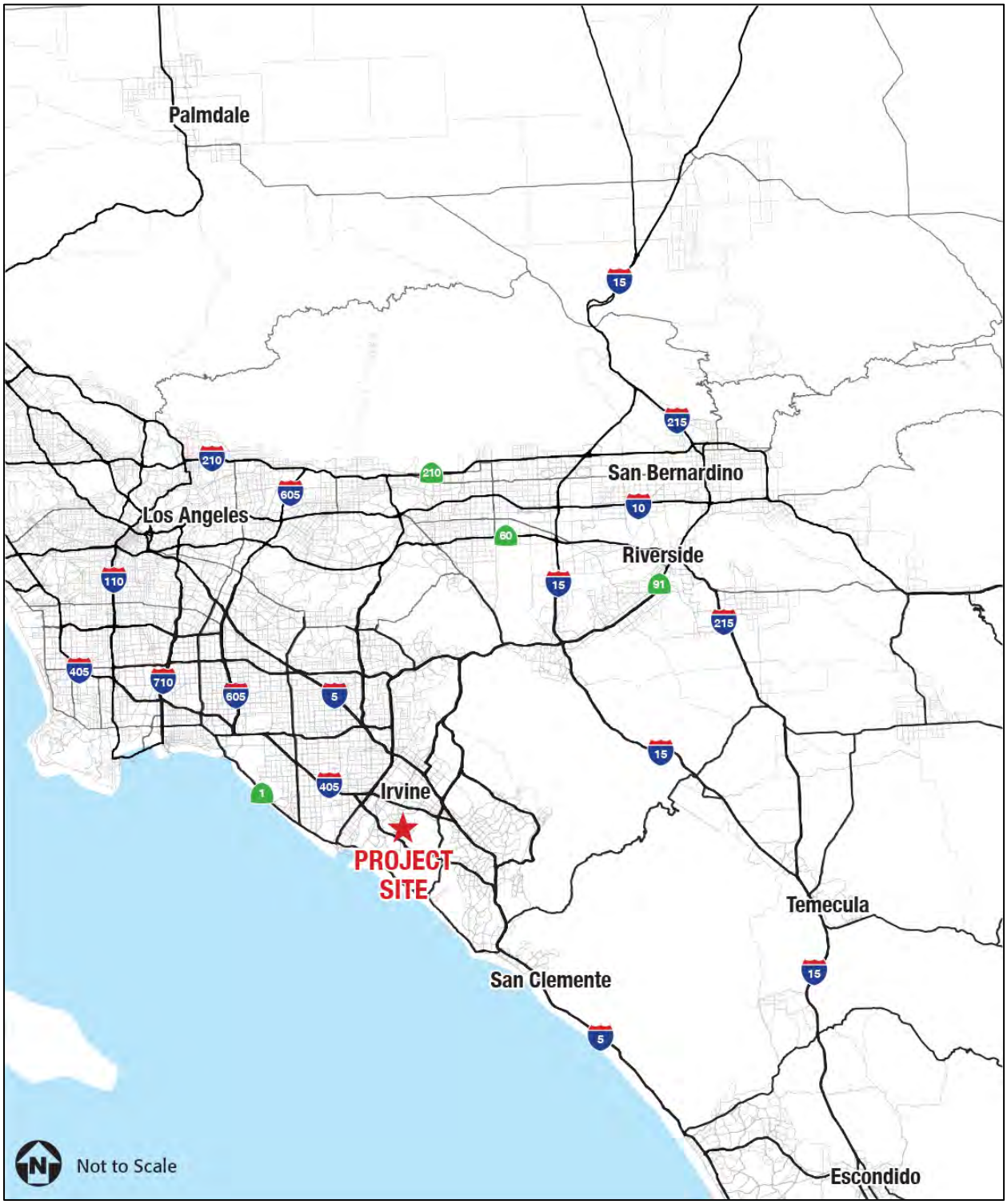

Exhibit 2: Site Vicinity

Source: Google Earth, 2020.

Exhibit 3: Conceptual Site Plan

Source: Ridge Landscape Architects, *Illustrative Site Plan*, 2021

2 ACOUSTIC FUNDAMENTALS

2.1 Sound and Environmental Noise

Acoustics is the science of sound. Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a medium (e.g. air) to the human ear. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or hertz (Hz).

Noise is defined as loud, unexpected, or annoying sound. In acoustics, the fundamental model consists of a noise source, a receptor, and the propagation path between the two. The loudness of the noise source, obstructions, or atmospheric factors affecting the propagation path, determine the perceived sound level and noise characteristics at the receptor. Acoustics deal primarily with the propagation and control of sound. A typical noise environment consists of a base of steady background noise that is the sum of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These sources can vary from an occasional aircraft or train passing by to continuous noise from traffic on a major highway. Perceptions of sound and noise are highly subjective from person to person.

Measuring sound directly in terms of pressure would require a large range of numbers. To avoid this, the decibel (dB) scale was devised. The dB scale uses the hearing threshold of 20 micropascals (µPa) as a point of reference, defined as 0 dB. Other sound pressures are then compared to this reference pressure, and the logarithm is taken to keep the numbers in a practical range. The dB scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels correspond closely to human perception of relative loudness. **Table 1: Typical Noise Levels**, provides typical noise levels.

Table 1: Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	– 110 –	Rock Band
Jet fly-over at 1,000 feet		
	– 100 –	
Gas lawnmower at 3 feet		
	– 90 –	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	– 80 –	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawnmower, 100 feet	**– 70 –**	Vacuum cleaner at 10 feet
Commercial area		Normal Speech at 3 feet
Heavy traffic at 300 feet	**– 60 –**	
		Large business office
Quiet urban daytime	**– 50 –**	Dishwasher in next room
Quiet urban nighttime	**– 40 –**	Theater, large conference room (background)
Quiet suburban nighttime		
	– 30 –	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	– 20 –	
		Broadcast/recording studio
	– 10 –	
Lowest threshold of human hearing	**– 0 –**	Lowest threshold of human hearing

Source: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Noise Descriptors

The dB scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Several rating scales have been developed to analyze the adverse effect of community noise on people. Because environmental noise fluctuates over time, these scales consider that the effect of noise on people is largely dependent on the total acoustical energy content of the noise, as well as the time of day when the noise occurs. The equivalent noise level (L_{eq}) is the average noise level averaged over the measurement period, while the day-night noise level (L_{dn}) and Community Equivalent Noise Level (CNEL) are measures of energy average during a 24-hour period, with dB weighted sound levels from 7:00 p.m. to 7:00 a.m. Most commonly, environmental sounds are described in terms of an average level (L_{eq}) that has the same acoustical energy as the summation of all the time-varying events. Each is applicable to this analysis and defined in **Table 2: Definitions of Acoustical Terms**.

Table 2: Definitions of Acoustical Terms

Term	Definitions
Decibel (dB)	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in µPa (or 20 micronewtons per square meter), where 1 pascals is the pressure resulting from a force of 1 newton exerted over an area of 1 square meter. The sound pressure level is expressed in dB as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g. 20 µPa). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency (Hz)	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level (dBA)	The sound pressure level in dB as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level (L_{eq})	The average acoustic energy content of noise for a stated period of time. Thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. For evaluating community impacts, this rating scale does not vary, regardless of whether the noise occurs during the day or the night.
Maximum Noise Level (L_{max}) Minimum Noise Level (L_{min})	The maximum and minimum dBA during the measurement period.
Exceeded Noise Levels (L_{01}, L_{10}, L_{50}, L_{90})	The dBA values that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day-Night Noise Level (L_{dn})	A 24-hour average L_{eq} with a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity at nighttime. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.4 dBA L_{dn}.
Community Noise Equivalent Level (CNEL)	A 24-hour average L_{eq} with a 5 dBA weighting during the hours of 7:00 a.m. to 10:00 a.m. and a 10 dBA weighting added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the evening and nighttime, respectively. The logarithmic effect of these additions is that a 60 dBA 24-hour L_{eq} would result in a measurement of 66.7 dBA CNEL.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends on its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

The A-weighted decibel (dBA) sound level scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be used. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends on the distance between the receptor and the noise source.

A-Weighted Decibels

The perceived loudness of sounds is dependent on many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by dBA values. There is a strong correlation between dBA and the way the human ear perceives sound. For this reason, the dBA has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of dBA, but are expressed as dB, unless otherwise noted.

Addition of Decibels

The dB scale is logarithmic, not linear, and therefore sound levels cannot be added or subtracted through ordinary arithmetic. Two sound levels 10 dB apart differ in acoustic energy by a factor of 10. When the standard logarithmic dB is A-weighted, an increase of 10 dBA is generally perceived as a doubling in loudness. For example, a 70 dBA sound is half as loud as an 80 dBA sound and twice as loud as a 60 dBA sound.[1] When two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dBA higher than one source under the same conditions.[2] Under the dB scale, three sources of equal loudness together would produce an increase of 5 dBA.

Sound Propagation and Attenuation

Sound spreads (propagates uniformly outward in a spherical pattern, and the sound level decreases (attenuates) at a rate of approximately 6 dB for each doubling of distance from a stationary or point source. Sound from a line source, such as a highway, propagates outward in a cylindrical pattern. Sound levels attenuate at a rate of approximately 3 dB for each doubling of distance from a line source, such as a roadway, depending on ground surface characteristics.[3] No excess attenuation is assumed for hard surfaces like a parking lot or a body of water. Soft surfaces, such as soft dirt or grass, can absorb sound, so an excess ground-attenuation value of 1.5 dB per doubling of distance is normally assumed. For line sources, an overall attenuation rate of 3 dB per doubling of distance is assumed.

Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm

1 *Noise Sources and Their Effects.* Available at: https://www.chem.purdue.edu/chemsafety/Training/PPETrain/dblevels.htm
2 FHWA, *Noise Fundamentals,* 2017. Available at: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm
3 California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, Page 2-29, September 2013.

reduces noise levels by 5 to 10 dBA.[4] The way that older homes in California were constructed generally provide a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30 dBA or more.[5]

Human Response to Noise

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels.

Noise environments and consequences of human activities are usually well represented by median noise levels during the day or night or over a 24-hour period. Environmental noise levels are generally considered low when the CNEL is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of low daytime levels are isolated, natural settings with noise levels as low as 20 dBA and quiet, suburban, residential streets with noise levels around 40 dBA.[6] Noise levels above 45 dBA at night can disrupt sleep. Examples of moderate-level noise environments are urban residential or semi-commercial areas (typically 55 to 60 dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most will accept the higher levels associated with noisier urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA). Regarding increases in dBA, the following relationships should be noted[7]:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived by humans.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A minimum 5 dBA is required before any noticeable change in community response would be expected. A 5-dBA increase is typically considered substantial.
- A 10-dBA change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Effects of Noise on People

While physical damage to the ear from an intense noise impulse is rare, a degradation of auditory acuity can occur even within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise but may be due to a single event such as an explosion. Natural hearing loss associated with aging may also be accelerated from chronic exposure to loud noise. The Occupational Safety and Health Administration has a noise exposure standard that is set at the noise threshold where hearing loss may occur from long-term exposures. The maximum allowable level is 90 dBA averaged over 8 hours. If the noise is above 90 dBA, the allowable exposure time is correspondingly shorter.

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4 James P. Cowan, *Handbook of Environmental Acoustics,* 1994.

5 HUD, *Noise Guidebook*, 2009. Available at: https://www.hudexchange.info/resource/313/hud-noise-guidebook/

6 Compiled from James P. Cowan, *Handbook of Environmental Acoustics,* 1994 and Cyril M. Harris, Handbook of Noise Control, 1979.

7 Compiled from California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013, and FHWA, *Noise Fundamentals,* 2017.

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. A noise level of about 55 dBA L_{dn} is the threshold at which a substantial percentage of people begin to report annoyance[8].

2.2 Groundborne Vibration

Sources of groundborne vibrations include natural phenomena (earthquakes, volcanic eruptions, sea waves, landslides, etc.) or man-made causes (explosions, machinery, traffic, trains, construction equipment, etc.). Vibration sources may be continuous (e.g. factory machinery) or transient (e.g. explosions or heavy equipment use during construction). Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One is the peak particle velocity (PPV); another is the root mean square (RMS) velocity. The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. The RMS velocity is defined as the average of the squared amplitude of the signal. The PPV and RMS vibration velocity amplitudes are used to evaluate human response to vibration.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations, displays the reactions of people and the effects on buildings produced by continuous vibration levels. The annoyance levels shown in the table should be interpreted with care since vibration may be found to be annoying at much lower levels than those listed, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage. In high noise environments, which are more prevalent where groundborne vibration approaches perceptible levels, this rattling phenomenon may also be produced by loud airborne environmental noise causing induced vibration in exterior doors and windows.

Ground vibration can be a concern in instances where buildings shake, and substantial rumblings occur. However, it is unusual for vibration from typical urban sources such as buses and heavy trucks to be perceptible. Common sources for groundborne vibration are planes, trains, and construction activities such as earth-moving which requires the use of heavy-duty earth moving equipment. For the purposes of this analysis, a PPV descriptor with units of inches per second (in/sec) is used to evaluate construction-generated vibration for building damage and human complaints.

[8] Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, 1992.

Table 3: Human Reaction and Damage to Buildings for Continuous or Frequent Intermittent Vibrations			
Maximum PPV (in/sec)	**Vibration Annoyance Potential Criteria**	**Vibration Damage Potential Threshold Criteria**	**FTA Vibration Damage Criteria**
0.008	--	Extremely fragile historic buildings, ruins, ancient monuments	--
0.01	Barely Perceptible	--	--
0.04	Distinctly Perceptible	--	--
0.1	Strongly Perceptible	Fragile buildings	--
0.12	--	--	Buildings extremely susceptible to vibration damage
0.2	--	--	Non-engineered timber and masonry buildings
0.25	--	Historic and some old buildings	--
0.3	--	Older residential structures	Engineered concrete and masonry (no plaster)
0.4	Severe	--	--
0.5	--	New residential structures, Modern industrial/commercial buildings	Reinforced-concrete, steel or timber (no plaster)
PPV = peak particle velocity; in/sec = inches per second; FTA = Federal Transit Administration			
Source: California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020 and Federal Transit Administration, Transit Noise and Vibration Assessment Manual, 2018.			

3 REGULATORY SETTING

To limit population exposure to physically or psychologically damaging as well as intrusive noise levels, the Federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

3.1 State of California

California Government Code

California Government Code Section 65302(f) mandates that the legislative body of each county and city adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of "normally acceptable", "conditionally acceptable", "normally unacceptable", and "clearly unacceptable" noise levels for various land use types. Single-family homes are "normally acceptable" in exterior noise environments up to 60 CNEL and "conditionally acceptable" up to 70 CNEL. Multiple-family residential uses are "normally acceptable" up to 65 CNEL and "conditionally acceptable" up to 70 CNEL. Schools, libraries, and churches are "normally acceptable" up to 70 CNEL, as are office buildings and business, commercial, and professional uses.

Title 24 – Building Code

The State's noise insulation standards are codified in the California Code of Regulations, Title 24: Part 1, Building Standards Administrative Code, and Part 2, California Building Code. These noise standards are applied to new construction in California for interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new multi-family residential buildings, the acceptable interior noise limit for new construction is 45 dBA CNEL.

UCI Long Range Development Plan Final EIR

Mitigation Measure Noi-1A of the *UCI 2007 Long Range Development Plan Environmental Impact Report* (LRDP EIR) provides a noise standard of 60 dBA CNEL for campus housing. As such, the on-site traffic noise analysis utilizes the 60 dBA CNEL noise standard from the LRDP EIR to analyze impacts.

3.2 Local

UCI is a State agency and uses the noise standards in the 2007 LRDP EIR. Although UCI is not subject to municipal regulations, the City of Irvine's noise standards are relevant to UCI to establish guidelines and evaluating noise impacts. City regulations are relevant for addressing UCI development projects that would affect adjacent noise-sensitive land uses in the City of Irvine.

City of Irvine

City of Irvine General Plan

The California Government Code requires that a noise element be included in the general plan of each county and city in the state. The *City of Irvine General Plan* (Irvine General Plan or IGP) *Noise Element* (Irvine Noise Element) identifies sources of noise and provide objectives and policies that ensure that noise from various sources does not create an unacceptable noise environment. Since the campus is located in the City of Irvine, the City of Irvine's land use compatibility noise standards are relevant to UCI in establishing guidelines and evaluating impacts. The Irvine Noise Element sets forth general community noise and land use compatibility guidelines, as shown in **Table 4: City of Irvine Land Use Compatibility Guidelines**. Sound levels up to 65 dBA CNEL are normally compatible for single-family residential, transient lodging, and park uses. Sound levels up to 60 dBA CNEL are normally compatible for institutional uses such as hospitals, churches, libraries, and schools.

Table 3: City of Irvine Land Use Compatibility Guidelines

Land Use Category	Uses	Energy Average (CNEL)							
		≤	55	60	65	70	75	80 ≥	≤
Residential[3]	Single-Family, Multiple-Family	A	A	B	B	C	D	D	A
	Mobile Home	A	A	B	C	C	D	D	A
Commercial Regional Family	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D	A
Commercial Regional Community	Commercial retail, Bank, Restaurant, Movie theater	A	A	A	A	B	B	C	A
Commercial Community Industrial & Institutional	Office building, Research & development Professional office, City office building	A	A	A	B	B	C	D	A
Commercial Recreation Institutional General	Amphitheater, Concert Hall, Auditorium, Meeting Hall	B	B	C	C	D	D	D	B
Commercial Recreation	Children's amusement park, Miniature golf, Go-cart track, Health club, Equestrian center	A	A	A	B	B	D	D	A
Commercial Community Industrial General	Automobile Service station, Auto dealer, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B	A
Institutional General	Hospital, Church, Library, School classrooms	A	A	B	C	C	D	D	A
Open Space	Parks	A	A	A	B	C	D	D	A
	Golf courses, Nature centers, Cemeteries, Wildlife reserves, Wildlife habitat	A	A	A	A	B	C	C	A
Agricultural	Agriculture	A	A	A	A	A	A	A	A

Notes:
Zone A **(Clearly Compatible):** Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Zone B **(Normally Compatible):** New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Zone C: **Normally Incompatibl**e: New construction or development should normally be discouraged. If new construction or development does proceed, a detailed analysis or noise reduction requirements must be made and needed noise insulation features must be included in the design.
Zone D **(Clearly Incompatible):** New construction or development should generally not be undertaken.

Source: City of Irvine, *City of Irvine General Plan*, Supp. No. 9, July 2015.

Objectives and Policies from the Irvine Noise Element that are relevant to the Project are as follows:

Objective F-1: Mobile Noise. Ensure that City residents are not exposed to mobile noise levels in excess of the CNEL Interior and Exterior Noise Standards (Table F-1), and Single Event Noise Standard.

Policy (c): Ensure that all proposed development projects are compatible with the existing and projected noise level by using the Land Use Noise Compatibility Matrix (Table F-2).

Policy (f): Require noise studies to identify all the mitigation measures necessary to reduce noise levels to meet the CNEL standard (Table F-1) and Single Event Noise Standard.

Objective F-2: Stationary Noise. Ensure that City residents are not exposed to stationary noise levels in excess of the City Noise Ordinance standards.

Policy (a): Require any new construction to meet the City Noise Ordinance standards as a condition of building permit approval.

Objective F-3: Noise Abatement. Achieve maximum efficiency in noise abatement efforts through intergovernmental coordination and public information programs.

Policy (a): Coordinate efforts to reduce noise impacts with appropriate public and government agencies.

City of Irvine Noise Ordinance

Construction Noise

IMC Section 6-8-205(A) indicates that construction activities may occur between 7:00 a.m. and 7:00 p.m. Mondays through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays. No construction activities shall be permitted outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the Chief Building Official or his or her authorized representative. Trucks, vehicles, and equipment that are making, or are involved with, material deliveries, loading, transfer of materials, equipment service, maintenance of any devices or appurtenances for (or within) any construction project in the City, shall not be operated or driven on City streets outside of these hours or on Sundays and federal holidays unless a temporary waiver is granted by the City. Any waiver granted shall take into consideration the potential impact upon the community. No construction activity would be permitted outside of these hours, except in emergencies including maintenance work on the City rights-of-way that might be required.

Interior and Exterior Noise Standards

The City of Irvine Noise Ordinance (Title 6, Division 8, Chapter 2, Section 6-8-204 of the Irvine Municipal Code [IMC]) also provides exterior and interior noise limit thresholds for certain periods of time. **Table 5: City of Irvine Noise Ordinance Limits**, presents noise standards published in Section 6-8-204 of the City of Irvine Noise Ordinance.

Table 4: City of Irvine Noise Ordinance Levels

Noise Zone	Exterior or Interior?	Time Period	Noise Levels (dBA) for a Period Not Exceeding				
			30 min	15 min	5 min	1 min	0 (anytime)
I: All hospitals, libraries, churches, schools, and residential properties	Exterior	7:00 a.m. – 10:00 p.m.	55	60	65[1]	70	75
		10:00 p.m. – 7:00 a.m.	50	55	60	65[1]	70
	Interior	7:00 a.m. – 10:00 p.m.	-	-	55	60	65
		10:00 p.m. – 7:00 a.m.	-	-	45	50	55
II: All professional office and public institutional properties.	Exterior	Any time	55	60	65	70	75
	Interior	Any time	-	-	55	60	65
III: All commercial properties excluding professional office properties.	Exterior	Any time	60	65	70	75	80
	Interior	Any time	-	-	55	60	65
IV: All industrial properties.	Exterior	Any time	70	75	80	85	90
	Interior	Any time	-	-	55	60	65

Notes:
1. This standard does not apply to multi-family residence private balconies. Multi-family developments with balconies that do not meet the 65 CNEL are required to provide occupancy disclosure notice to all future tenants regarding potential noise impacts.
2. It shall be unlawful for any person at any location within the City to create any noise or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person which causes the noise level when measured on any property within designated noise zones either within or without the City to exceed the applicable noise standard.
3. Each of the noise standards specified above shall be reduced by five dBA for impact, or predominant tone noise or for noises consisting of speech or music.
4. In the event that the noise source and the affected property are within different noise zones, the noise standards of the affected property shall apply.

Source: City of Irvine, *City of Irvine Municipal Code*, *Title 6, Division 8, Chapter 2, Section 6-8-204*, codified through Ordinance No. 20-02, enacted February 11, 2020.

4 EXISTING CONDITIONS

4.1 Existing Noise Sources

The Project site is impacted by various noise sources. Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise near the Project site. The primary sources of stationary noise near the Project site are those associated with the residential uses to the south and east, including group conversations, pet noise, and general maintenance activities. According to the LRDP EIR, noise levels at the Schubert Court Residences (located approximately 1,300 feet west of the project site) is 58 dBA L_{eq} and 63 dBA CNEL.

Existing Mobile Noise

The majority of the existing noise in the project area is generated from vehicle sources along East Peltason Drive. According to the LRDP EIR, monitored noise levels along East Peltason Drive (South of Pereira Drive) is 65 dBA and noise levels along Los Trancos Drive and Vista Bonita Drive is 56 dBA.

Existing Stationary Noise

The primary sources of stationary noise in the Project vicinity are those associated with the operations of nearby residences, and the parking lot associated with the University Club and the UCI California Institute of Telecommunications and Information Technology building. The noise associated with the service parking area associated with the UCI California Institute may represent a single-event noise occurrence, short-term noise, or long-term/continuous noise.

4.2 Sensitive Receptors

Noise exposure standards and guidelines for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Residences, hospitals, schools, guest lodging, libraries, and churches are treated as the most sensitive to noise intrusion and therefore have more stringent noise exposure targets than do other uses, such as manufacturing or agricultural uses that are not subject to impacts such as sleep disturbance. Sensitive receptors near the Project site are shown in **Table 6: Sensitive Receptors**.

Table 5: Sensitive Receptors

Receptor Description	Distance and Direction from the Project[1]
Single Family Residences	Adjacent to the east
Single Family Residences	Adjacent to the south
Aldrich Park	950 feet to the north
Santiago Apartments	955 feet to the east
UCI Middle Earth Housing	1,002 feet to the northeast
UCI Educational Facilities	1,173 feet to the north
UCI Palo Verde Housing	1,469 feet to the east
UCI Campus Village Housing	1,470 feet to the northwest

1. Distances were measured using Google Earth 2020.

5 SIGNIFICANCE CRITERIA AND METHODOLOGY

5.1 CEQA Thresholds

Based upon the criteria derived from Appendix G of the California Environmental Quality Act (CEQA) Guidelines, a project normally would have a significant effect on the environment if it would:

- Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Generate excessive ground borne vibration or ground borne noise levels; and
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, expose people residing or working in the Project area to excessive noise levels.

Significance of Changes in Traffic Noise Levels

An off-site traffic noise impact typically occurs when there is a discernable increase in traffic and the resulting noise level exceeds an established noise standard. In community noise considerations, changes in noise levels greater than 3 dB are often identified as substantial, while changes less than 1 dB will not be discernible to local residents. In the range of 1 to 3 dB, residents who are very sensitive to noise may perceive a slight change. In laboratory testing situations, humans are able to detect noise level changes of slightly less than 1 dB. However, this is based on a direct, immediate comparison of two sound levels. Community noise exposures occur over a long period of time and changes in noise levels occur over years (rather than the immediate comparison made in a laboratory situation). Therefore, the level at which changes in community noise levels become discernible is likely to be some value greater than 1 dB, and 3 dB is the most commonly accepted discernable difference. A 5-dB change is generally recognized as a clearly discernable difference.

Stationary Source Noise Levels

Stationary noise impacts typically occur when noise levels exceed the City of Irvine Noise Ordinance standards shown in Table 4 and Table 5**.** The 2007 LRDP EIR requires new or modified stationary noise sources such as utility plant facilities (constant noise source), major HVAC systems (constant noise source), and parking structures (constant and/or intermittent noise source) to be designed in a manner that would minimize the exposure of noise-sensitive land uses (i.e., campus housing, classrooms, libraries, and clinical facilities) to noise levels that exceed the following state noise standards: 60 dBA CNEL (single-family campus housing); 65 dBA CNEL (multifamily campus housing, dormitories, lodging); and 70 dBA CNEL (classrooms, libraries, clinical facilities). If the affected noise-sensitive land uses are already exposed to noise levels in excess of these standards, then the new or modified stationary noise sources shall not increase the ambient noise level by more than 3 dBA.

Significance Construction Noise Levels

The City of Irvine exempts construction noise during daytime hours (7:00 a.m. and 7:00 p.m. Mondays through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays for the City of Irvine and between 7:00 a.m. to 6:30 p.m.

The 2007 LRDP EIR specifies that construction activities would have a significant temporary (direct) noise impact if they would result in:

- Exposure of persons to, or generation of noise levels in, excess of a 12-hour average sound level of 75 dBA between 7:00 am and 7:00 pm at any noise-sensitive land use, or
- An increase of 3 dBA or more if the ambient noise levels already exceed a 12-hour average sound level of 75 dBA between 7:00 am and 7:00 pm at any noise-sensitive land use.

5.2 Methodology

Construction

Construction noise levels were based on typical noise levels generated by construction equipment published by the Federal Transit Administration (FTA) and FHWA. Construction noise is assessed in dBA L_{eq}. This unit is appropriate because L_{eq} can be used to describe noise level from operation of each piece of equipment separately, and levels can be combined to represent the noise level from all equipment operating during a given period.

Reference noise levels are used to estimate operational noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Noise level estimates do not account for the presence of intervening structures or topography, which may reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual temporary construction noise.

Operations

The analysis of the Existing and With Project noise environments is based on noise prediction modeling and empirical observations. Reference noise level data are used to estimate the Project operational noise impacts from stationary sources. Noise levels are collected from field noise measurements and other published sources from similar types of activities are used to estimate noise levels expected with the Project's stationary sources. The reference noise levels are used to represent a worst-case noise environment as noise level from stationary sources can vary throughout the day. Operational noise is evaluated based on the standards within the IMC Section 6-8-204(B), Exterior and Interior Noise Standards and the City's General Plan Land Use and Compatibility Standards.

Vibration

Groundborne vibration levels associated with construction-related activities for the Project were evaluated utilizing typical groundborne vibration levels associated with construction equipment, obtained from FTA published data for construction equipment. Potential groundborne vibration impacts related to building/structure damage and interference with sensitive existing operations were evaluated, considering the distance from construction activities to nearby land uses and typically applied criteria.

6 POTENTIAL IMPACTS AND MITIGATION

6.1 Acoustical Impacts

Threshold 6.1 Would the Project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the Project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the uses surrounding the construction site. Heavy equipment would operate at approximately 150 feet from existing residences to the south and east. The California Institute of Telecommunications and Information Technology is located approximately 240 feet to the north and the University Club is located approximately 350 feet to the north, across East Peltason Drive. Open space is adjacent to the west.

Construction activities would include demolition, site preparation, grading, building construction, paving, and architectural coating. Such activities may require dozers, concrete/industrial saws, and excavators during demolition; dozers and tractors during site preparation; trenching equipment during trenching and utilities; graders, dozers, tractors, scrapers, and excavators during grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full power operation followed by 3 to 4 minutes at lower power settings. Other primary sources of acoustical disturbance would be random incidents, which would last less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. The demolition and grading phases generally have the highest noise levels but the shortest duration of all construction phases. Typical noise levels associated with individual construction equipment are listed in **Table 12: Typical Construction Noise Levels.**

As noted above, the closest sensitive receptors to the Project are the residences adjacent to the south and east, which are as close as approximately 150 feet from the construction activity area. The equipment used near the existing residences include jack hammers, heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, and scrapers. The highest noise level from these types of equipment is 88 dBA at 50 feet. Construction activities would generally be limited to weekday daytime hours between 7:00 a.m. and 7:00 p.m. Monday through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays and grading activities would conform to the time-of-day restrictions of IMC Section 6-8-205(A). Noise impacts from Project-related construction activities occurring within or adjacent to the project site would be a function of the noise generated by construction equipment, the location of the equipment, the timing and duration of the noise-generating construction activities, and the relative distance to the noise-sensitive receptors.

Table 6: Typical Construction Noise Levels			
Equipment	**Typical Noise Level (dBA) at 25 feet from Source**	**Typical Noise Level (dBA) at 50 feet from Source[1]**	**Typical Noise Level (dBA) at 150 feet from Source[1]**
Air Compressor	86	80	70
Backhoe	86	80	70
Compactor	88	82	72
Concrete Mixer	91	85	75
Concrete Pump	88	82	72
Concrete Vibrator	82	76	66
Crane, Derrick[2]	94	88	78
Crane, Mobile	89	83	73
Dozer	91	85	75
Generator	88	82	72
Grader	91	85	75
Impact Wrench	91	85	75
Jack Hammer	94	88	78
Loader	86	80	70
Paver	91	85	75
Pile-driver (Impact)[2]	107	101	91
Pile-driver (Sonic)[2]	101	95	85
Pneumatic Tool	91	85	75
Pump	83	77	67
Roller	91	85	75
Saw	82	76	66
Scraper	91	85	75
Shovel	88	82	72
Truck	90	84	74
1. Calculated using the inverse square law formula for sound attenuation: $dBA_2 = dBA_1+20Log(d_1/d_2)$ Where: dBA_2 = estimated noise level at receptor; dBA_1 = reference noise level; d_1 = reference distance; d_2 = receptor location distance. 2. Equipment not required for Project construction.			
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.			

Pursuant to LRDP EIR Mitigation Measure Noi-2A, construction activities occurring Monday through Friday are limited to the hours of 7:00 a.m. to 7:00 p.m., except during summer, winter, or spring break at which construction may occur at the times approved by UCI. Construction noise occurring on weekends that can be heard from off-campus land uses and on-campus residential housing are limited to the hours of 9:00 a.m. to 6:00 p.m. on Saturdays, with no construction occurring on Sundays or holidays. However, as determined by UCI, if on-campus residential housing is unoccupied (during summer, winter, or spring break, for example), or would otherwise be unaffected by construction noise, construction may occur at any time.

Although UCI is not subject to City ordinances, construction would also adhere to the City of Irvine's noise ordinance where possible. IMC Section 6-8-205(A) indicates that construction activities may occur between 7:00 a.m. and 7:00 p.m. Mondays through Fridays, and 9:00 a.m. and 6:00 p.m. on Saturdays. While the City establishes limits to the hours during which construction activity may take place, it does not identify specific noise level limits for construction noise levels. The City's permitted hours of construction are required in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant impact. However, this

analysis conservatively uses the FTA's threshold of 80 dBA (8-hour L_{eq}) to evaluate construction noise impacts.[9]

The noise levels calculated in **Table 8: Project Construction Noise Levels**, show estimated exterior construction noise at the closest receptors. Residential uses are located adjacent to the east and south of the Project site. UCI buildings are located to the north, across East Peltason Drive. Construction noise levels drop off at a rate of about 6 dBA per doubling of distance between the noise source and receptor. The noise levels shown in **Table 8** conservatively do not account for attenuation from the perimeter walls along each of the existing sensitive receptors to the south and east.

Table 7: Project Construction Noise Levels

Construction Phase	Receptor Location			Worst Case Modeled Exterior Noise Level (dBA L_{eq}) [2]	Noise Threshold (dBA L_{eq}) [3]	Exceeded?
	Land Use	Direction	Distance (feet) [1]			
Demolition	Residential	East and South	150	76.3	80	No
	UCI Buildings	North	240	72.2	80	No
Site Preparation	Residential	East and South	150	76.8	80	No
	UCI Buildings	North	240	72.2	80	No
Grading	Residential	East and South	150	78.8	80	No
	UCI Buildings	North	240	74.7	80	No
Building Construction	Residential	East and South	150	79.0	80	No
	UCI Buildings	North	240	75.7	80	No
Paving	Residential	East and South	150	77.0	80	No
	UCI Buildings	North	240	72.9	80	No
Architectural Coating	Residential	East and South	150	67.2	80	No
	UCI Buildings	North	240	72.9	80	No

Notes:
1. Distance is from the nearest receptor to the main construction activity area on the project site. Not all equipment would operate at the closest distance to the receptor.
2. Modeled noise levels conservatively do not take credit for attenuation from perimeter walls along each of the existing sensitive receptors to the south and east.
3. Threshold from Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual,* Table 7-3, 2018.

Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to **Appendix A** for noise modeling results.

Actual construction-related noise activities would be lower than the conservative levels described above and would cease upon completion of construction. Due to the variability of construction activities and equipment for the Project, overall construction noise levels would be intermittent and would fluctuate over time. These assumptions represent the worst-case noise scenario because construction activities would typically be spread out throughout the Project site, and thus some equipment would be farther away from the affected receptors. In addition, the noise modeling assumes that construction noise is constant, when, in fact, construction activities and associated noise levels would fluctuate and generally be brief and sporadic, depending on the type, intensity, and location of construction activities. It is also noted that Project construction equipment would be equipped with functioning mufflers as mandated by

[9] Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, Table 7-2, Page 179, September 2018.

the state, and construction would occur throughout the Project site and would not be concentrated or confined in the area directly adjacent to sensitive receptors.

Table 8 shows that construction noise levels would not exceed the 80-dBA threshold. Additionally, compliance with the construction time frames allowed in UCI LRDP EIR Mitigation Measure Noi-2A would minimize impacts from construction noise, as construction would be limited to daytime hours on weekdays and Saturdays. Therefore, Project construction activities would result in a less than significant noise impact.

Operations

The project proposes to replace 100 existing multi-family residences with 220 dwelling units for UCI faculty/staff. Thus, the operational noise (stationary sources and traffic) associated with the proposed Project would be similar to or less than existing noise levels.

After completion of construction activities, typical noise associated with residential land uses include children playing, pet noise, amplified music, pool and spa equipment, and delivery drop offs. Noise from residential stationary sources would be consistent with the surrounding uses and would primarily occur during the "daytime" activity hours of 7 a.m. to 10 p.m. The residences would be required to comply with the noise standards set forth in the IMC Section 6-8-204(B), Exterior and Interior Noise Standards.

Mechanical Noise. The nearest sensitive receptors to the Project site are the University Hills residences to the south and east. Potential stationary noise sources related to long-term Project operations would include mechanical equipment. Mechanical equipment (e.g., heating ventilation and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[10] Noise has a decay rate due to distance attenuation, which is calculated based on the Inverse Square Law of sound propagation. Based upon the Inverse Square Law, sound levels decrease by 6 dBA for each doubling of distance from the source.[11]

The HVAC units associated with the proposed residences would be located 70 feet or more from the closest sensitive receptors and would be separated by terrain and a perimeter wall (i.e., the closest sensitive receptors are at a higher elevation than the proposed project and have a wall along the property line). At this distance HVAC noise would be reduced to 49 dBA, which is below the City's lowest daytime and nighttime standards of 55 dBA and 50 dBA, respectively. It should be noted that this noise level conservatively does not take credit for attenuation from terrain or intervening walls, which would further reduce noise levels. Additionally, the HVAC equipment would run sporadically throughout the day (when temperatures are warmer) and less frequent during nighttime hours (when temperatures are cooler). Furthermore, HVAC noise currently occurs on-site and Project generated noise would be similar to existing conditions. Therefore, impacts from mechanical equipment would be less than significant.

Parking Noise. Traffic associated with parking areas is typically not of sufficient volume to exceed community noise standards, which are based on a time-averaged scale such as the L_{eq} or CNEL scales. The instantaneous maximum sound levels generated by a car door slamming, engine starting up, and car pass-

[10] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

[11] Cyril M. Harris, *Noise Control in Buildings*, 1994.

bys range from 53 to 61 dBA[12] and may be an annoyance to adjacent noise-sensitive receptors. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Sound levels of speech typically range from 33 dBA at 50 feet for normal speech to 50 dBA at 50 feet for very loud speech.[13]

Parking currently occurs on-site and also occurs at the adjacent properties under existing conditions. Nominal parking noise would occur on-site within visitor parking stalls and would be consistent with existing conditions. Each of the proposed single-family residences would include a garage, which would attenuate parking noise. Additionally, parking lot noise is instantaneous and would be well below the City of Irvine and noise standards when averaged over time. Therefore, noise impacts from parking lots would be less than significant.

Off-Site Traffic Noise. In general, a 3-dBA increase in traffic noise is barely perceptible to people, while a 5-dBA increase is readily noticeable. Traffic volumes on Project area roadways would have to approximately double for the resulting traffic noise levels to generate a 3-dBA increase.[14] Project implementation would replace 100 existing multi-family dwelling units with 220 dwelling units for UCI faculty/staff. As such, the proposed project is not anticipated to significantly change roadway traffic volumes. Therefore, because the proposed Project would not generate sufficient traffic to result in a permanent 3-dBA increase in ambient noise levels, noise impacts associated with traffic would be less than significant.

On-Site Traffic Noise. On-site traffic noise levels from East Peltason Drive and Los Trancos Drive were modeled using the SoundPLAN software. SoundPLAN allows computer simulations of noise situations, and creates noise contour maps using reference noise levels, topography, point and area noise sources, mobile noise sources, groundcover type, and intervening structures. Mobile noise sources were modeled in SoundPLAN for East Peltason Drive and Los Trancos Drive using traffic data from the LRDP EIR (adjusted for future growth) and the Institute of Transportation Engineers (ITE) *ITE Trip Generation Manual*. Traffic along East Peltason Drive was modeled with an average daily traffic (ADT) volume of 19,000 and a speed of 35 miles per hour (mph), and Los Trancos Drive was modeled with 5,000 ADT and a speed of 25 mph. A total of 33 residential receivers were modeled on-site and represent the closest locations for resident exposure to traffic noise along East Peltason Drive and Los Trancos Drive. The modeled receiver results are provided in **Table 9: SoundPLAN Receiver Results**, and the noise contours are shown in **Exhibit 4: Traffic Noise Contours.**

According to the SoundPLAN results, the loudest on-site traffic noise levels would range between 44.6 dBA CNEL and 59.2 dBA CNEL, which would not exceed the 60 dBA CNEL noise standard for single-family campus housing from the LRDP EIR (LRDP EIR Mitigation Measure Noi-1A). It is noted that the proposed residences would be constructed in compliance with the 2019 California Building Code standards. According to the U.S. Environmental Protection Agency's (EPA's) *Protective Noise Levels* document (1978) the exterior-to-interior reduction for standard construction is generally 25 dBA. Therefore, interior noise levels would range between 19.6 dBA CNEL and 34.2 dBA CNEL and would be well below the State's interior noise standard of 45 dBA CNEL. On-site traffic noise levels would comply with State and local noise standards and impacts would be less than significant.

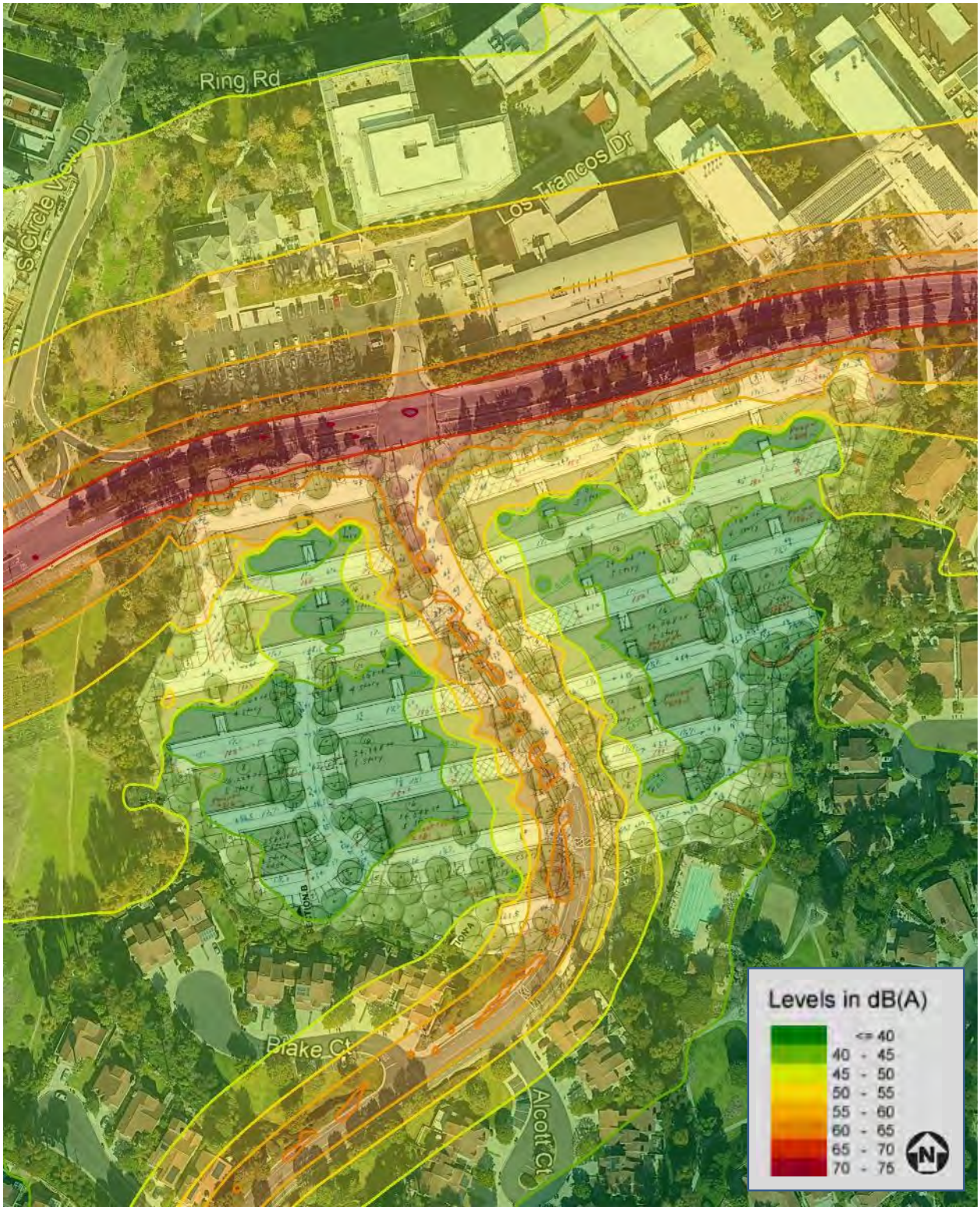
[12] Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.

[13] Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

[14] According to the California Department of Transportation, *Technical Noise Supplement to Traffic Noise Analysis Protocol* (September 2013), it takes a doubling of traffic to create a noticeable (i.e., 3 dBA) noise increase.

Table 8: SoundPLAN Receiver Results	
Receiver	**Modeled Traffic Noise Level (dBA CNEL)[1]**
1	51.4
2	57.1
3	57.5
4	57.7
5	57.7
6	59.2
7	56.5
8	55.8
9	58.2
10	55.9
11	58.4
12	54.3
13	58.8
14	51.7
15	59.1
16	51.7
17	52.0
18	45.8
19	50.5
20	44.6
21	51.1
22	45.1
23	52.4
24	52.3
25	51.8
26	51.6
27	51.5
28	48.3
29	53.5
30	53.8
31	54.6
32	54.5
33	51.8
1. Calculated using the SoundPLAN Essential software. Refer to **Appendix A** for modeled receiver locations.	

Exhibit 4: Traffic Noise Contours



LRDP Amendment

The LRDP EIR found that the LRDP would not result in a substantial noise increase or expose persons to noise in excess of standards with the implementation of mitigation measures. The proposed Project would amend the existing 2007 LRDP to accommodate the project and increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. Although the Project proposes to amend the 2007 LRDP housing program to include additional faculty/staff housing units, the proposed LRDP amendment would not increase student enrollment or faculty/staff populations beyond what was analyzed in the 2007 LRDP.

The LRDP EIR analyzed the noise impacts for the entire Campus area, which includes the proposed Project. The noise analysis included in the LRDP EIR was based on the regulatory requirements and noise generation factors resulting from land uses proposed as a part of the LRDP. As shown above, residential development would not result in significant impacts. The LRDP amendment would accommodate anticipated planned growth and would reduce associated vehicle emissions due to fewer vehicle trips and shorter trip lengths by essentially providing infill residential development on the campus and reducing the need to travel from off-site locations. Therefore, the Project would be consistent with the growth projections in the 2007 LRDP and the goals and policies in the UCI Strategic Plan.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 6.2 Would the Project generate excessive groundborne vibration or groundborne noise levels?

Increases in groundborne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations in their 2018 *Transit Noise and Vibration Impact Assessment Manual*. The types of construction vibration impacts include human annoyance and building damage.

The Federal Transit Administration (FTA) has published standard vibration velocities for construction equipment operations. In general, the FTA architectural damage criterion for continuous vibrations (i.e., 0.2 in/sec) appears to be conservative. The types of construction vibration impacts include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 30 feet. This distance can vary substantially depending on the soil composition and underground geological layer between vibration source and receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. For example, for a building that is constructed with reinforced concrete with no plaster, the FTA guidelines show that a vibration level of up to 0.5 in/sec is considered safe and would not result in any construction vibration damage. This evaluation uses the FTA architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 inch-per-second peak particle velocity (PPV) and

human annoyance criterion of 0.4 inch-per-second PPV in accordance with California Department of Transportation (Caltrans) guidance.[15]

Table 10: Typical Construction Equipment Vibration Levels, lists vibration levels at 25 feet and 50 feet for typical construction equipment. Groundborne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in **Table 10**, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.003 to 0.089 in/sec PPV at 25 feet from the source of activity, which is below the FTA's 0.2 PPV threshold.

Table 9: Typical Construction Equipment Vibration Levels

Equipment	Peak Particle Velocity at 25 Feet (in/sec)	Peak Particle Velocity at 50 Feet (in/sec)[1]
Large Bulldozer	0.089	0.032
Caisson Drilling	0.089	0.032
Loaded Trucks	0.076	0.027
Jackhammer	0.035	0.012
Small Bulldozer/Tractors	0.003	0.001

1. Calculated using the following formula: $PPV_{equip} = PPV_{ref} \times (25/D)^{1.5}$, where: PPV_{equip} = the peak particle velocity in in/sec of the equipment adjusted for the distance; PPV_{ref} = the reference vibration level in in/sec from Table 7-4 of the Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018; D = the distance from the equipment to the receiver.

Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.

The nearest off-site structure are the residences that are located more than 50 feet from the Project construction area. As shown in **Table 10**, at 50 feet, construction equipment vibration velocities would not exceed 0.089 in/sec PPV, which is below the FTA's 0.2 PPV threshold and Caltrans' 0.4 in/sec PPV threshold for human annoyance. It is also acknowledged that construction activities would occur throughout the Project site and would not be concentrated at the point closest to the nearest off-site structure. Additionally, once operational, the Project would not be a source of groundborne vibration. Therefore, vibration impacts associated with the proposed Project would be less than significant.

LRDP Amendment

The proposed LRDP Amendment would increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. The LRDP EIR found that the LRDP would not result in excessive groundborne vibration with the implementation of mitigation measures. LRDP EIR Mitigation Measure Noi-4A requires a construction vibration mitigation program for projects that are within 100 feet of vibration-sensitive uses (i.e., buildings containing vibration-sensitive instruments or operations, or buildings that are considered vibration sensitive due to their age, construction type and/or fragile condition). Pile driving is not anticipated for future residential development associated with the LRDP Amendment. Future development projects within 100 feet of vibration-sensitive uses or within 600 feet if pile driving is required, would be required to comply with LRDP EIR Mitigation Measure Noi-4A to conduct a construction vibration mitigation program, if vibration levels would potentially exceed thresholds for building damage and human annoyance. Therefore, future development associated with the LRDP Amendment would be less than significant.

[15] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, September 2013.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

Threshold 6.3 For a Project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?

The nearest airport is the John Wayne Airport located approximately 2.4-miles to the northwest of the Project site. According to the *John Wayne Airport 2018 Annual 60-75 (5 dB intervals) CNEL Noise Contours*, the Project site is located outside the 60 dBA CNEL noise contour for John Wayne Airport. Therefore, the Project would not expose people residing or working in the Project area to excessive airport- or airstrip-related noise levels and no mitigation is required.

LRDP Amendment

The LRDP EIR found that the LRDP would not result in an impact related to exposure to aircraft noise. The proposed LRDP Amendment would increase faculty/staff housing units by 130 for a total of 1,830 dwelling units. The UCI Campus is located outside the 60 dBA CNEL noise contour for John Wayne Airport, which is consistent with the 60 dBA CNEL noise limit for single-family campus housing identified in the 2007 LRDP EIR.[16] Therefore, the Project would not expose people residing or working in the Project area to excessive airport- or airstrip-related noise levels and no mitigation is required.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

6.2 Cumulative Noise Impacts

As discussed above, all Project construction and operational noise impacts would be less than significant. Construction noise impacts are by nature localized. Based on the fact that noise dissipates as it travels away from its source, noise impacts would be limited to the Project site and vicinity.

The Project's construction activities would not result in a substantial temporary increase in ambient noise levels. The City of Irvine permits construction activities within the allowed hours outlined in the City's Noise Ordinance and the analysis above shows that construction noise would not exceed FTA standards. There would be periodic, temporary, noise impacts that would cease upon completion of construction activities. The Project would contribute to other proximate construction project noise impacts if construction activities were conducted concurrently. However, based on the noise analysis above, the Project's construction-related noise impacts would be less than significant. Given that noise dissipates as it travels away from its source, operational noise impacts from on-site activities and other stationary sources would be limited to the Project site and vicinity. Thus, cumulative operational noise impacts from related projects, in conjunction with Project specific noise impacts, would not be cumulatively significant.

[16] University of California, Irvine, *2007 Long Range Development Plan Final Environmental Impact Report*, Mitigation Measure Noi-1A, page 4.9-29.

As discussed above, operational noise caused by the proposed Project would be less than significant. Due to site distance and these intervening land uses, cumulative stationary noise impacts would not occur. No known past, present, or reasonably foreseeable projects would compound or increase the operational noise levels generated by the Project. Therefore, cumulative impacts relative to temporary and permanent noise generation from the proposed Project would be less than significant.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

7 REFERENCES

1. California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.
2. California Department of Transportation, *Transportation and Construction Vibration Guidance Manual*, 2020.
3. City of Irvine, *City of Irvine General Plan*, 2015.
4. City of Irvine, *City of Irvine Municipal Code*, codified through Ordinance No. 20-02, February 11, 2020.
5. County of Orange, *Airport Environs Land Use Plan for John Wayne Airport*, April 17, 2008.
6. County of Orange, *John Wayne Airport 2018 Annual 60-75 (5 dB intervals) CNEL Noise Contours*, 2018.
7. Cowan, James P., *Handbook of Environmental Acoustics,* 1994.
8. Cyril M. Harris, *Noise Control in Buildings*, 1994.
9. Elliott H. Berger, Rick Neitzel, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values,* June 26, 2015.
10. Federal Highway Administration, *Noise Fundamentals*, 2017. Available at: https://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide02.cfm
11. Federal Interagency Committee on Noise, *Federal Agency Review of Selected Airport Noise Analysis Issues*, August 1992.
12. Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.
13. Kariel, H. G., *Noise in Rural Recreational Environments*, Canadian Acoustics 19(5), 3-10, 1991.
14. Ridge Landscape Architects, *Illustrative Site Plan*, 2021.
15. Stantec, *UCI University Hills Area 12 Faculty Housing Project,* Traffic Study, 2021.
16. University of California, Irvine, *2007 Long Range Development Plan Final Environmental Impact Report*, November 2007.
17. University of California, Irvine, *Long Range Development Plan*, 2007.
18. U.S. Environmental Protection Agency, *Protective Noise Levels*, 1978.
19. U.S. Department of Housing and Urban Development, *Noise Guidebook*, 2009.

Appendix A

Noise Data

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/5/2020
Case Description: Demolition

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	240	0
Excavator	No	40		80.7	240	0
Excavator	No	40		80.7	240	0
Excavator	No	40		80.7	240	0
Dozer	No	40		81.7	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	76	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	68	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	76	72.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80	76.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Dozer	No	40		81.7	150	0

		Results												
		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)				
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Concrete Saw		80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator		71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	80	76.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/5/2020
Case Description: Site Preparation

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	240	0
Dozer	No	40		81.7	240	0
Dozer	No	40		81.7	240	0
Tractor	No	40	84		240	0
Backhoe	No	40		77.6	240	0
Front End Loader	No	40		79.1	0	0
Tractor	No	40	84		0	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	76	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		0		0		0		0		0		0		0
Tractor		0		0		0		0		0		0		0
Total	76	72.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0
Tractor	No	40	84		150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	0	0
Tractor	No	40	84		0	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Noise Limits (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Dozer	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader		0		0		0		0		0		0		0
Tractor		0		0		0		0		0		0		0
Total	80	76.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0
Dozer	No	40		81.7	150	0
Tractor	No	40	84		150	0
Backhoe	No	40		77.6	150	0
Front End Loader	No	40		79.1	150	0
Tractor	No	40	84		150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.5	76.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/5/2020
Case Description: Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	240	0
Excavator	No	40		80.7	240	0
Grader	No	40	85		240	0
Dozer	No	40		81.7	240	0
Scraper	No	40		83.6	240	0
Scraper	No	40		83.6	240	0
Tractor	No	40	84		240	0
Backhoe	No	40		77.6	240	0
Tractor	No	40	84		240	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	67.1	63.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	71.4	67.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	68	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	63.9	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.4	74.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	150	0
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	150	0
Tractor	No	40	84		150	0
Backhoe	No	40		77.6	150	0
Tractor	No	40	84		150	0

Results

	Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	78.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
East	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40		80.7	150	0
Excavator	No	40		80.7	150	0
Grader	No	40	85		150	0
Dozer	No	40		81.7	150	0
Scraper	No	40		83.6	150	0
Scraper	No	40		83.6	150	0
Tractor	No	40	84		150	0
Backhoe	No	40		77.6	150	0
Tractor	No	40	84		150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Excavator	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Grader	75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Scraper	74	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	78.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/5/2020
Case Description: Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	240	0
All Other Equipment > 5 HP	No	50	85		240	0
All Other Equipment > 5 HP	No	50	85		240	0
All Other Equipment > 5 HP	No	50	85		240	0
Generator	No	50		80.6	240	0
Backhoe	No	40		77.6	240	0
Tractor	No	40	84		240	0
Front End Loader	No	40		79.1	240	0
Welder / Torch	No	40		74	240	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane	66.9	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	71.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	71.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	71.4	68.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	67	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	70	66	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	63.9	60	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	71.4	75.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
All Other Equipment > 5 HP	No	50	85		150	0
All Other Equipment > 5 HP	No	50	85		150	0
All Other Equipment > 5 HP	No	50	85		150	0
Generator	No	50		80.6	150	0
Backhoe	No	40		77.6	150	0
Tractor	No	40	84		150	0
Front End Loader	No	40		79.1	150	0
Welder / Torch	No	40		74	150	0

Results

Equipment	Calculated (dBA) *Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq	Noise Limit Exceedance (dBA) Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax	Night Leq
Crane	71	63	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	75.5	72.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	71.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	69.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	64.5	60.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	79	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
East	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	150	0
All Other Equipment > 5 HP	No	50	85		150	0
All Other Equipment > 5 HP	No	50	85		150	0
All Other Equipment > 5 HP	No	50	85		150	0
Generator	No	50		80.6	150	0
Backhoe	No	40		77.6	150	0
Tractor	No	40	84		150	0
Front End Loader	No	40		79.1	150	0
Welder / Torch	No	40		74	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	71.2	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	75.5	71.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	72.1	68.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Generator	74	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Backhoe	74	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	68	64	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Welder / Torch	74.5	70.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.5	78.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/5/2020
Case Description: Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	240	0
Paver	No	50		77.2	240	0
Pavement Scarafier	No	20		89.5	240	0
Pavement Scarafier	No	20		89.5	240	0
Roller	No	20		80	240	0
Roller	No	20		80	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	63.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	63.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	75.9	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	75.9	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	66.4	59.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.9	72.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	150	0
Paver	No	50		77.2	150	0
Pavement Scarafier	No	20		89.5	150	0
Pavement Scarafier	No	20		89.5	150	0
Roller	No	20		80	150	0
Roller	No	20		80	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
East	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	150	0
Paver	No	50		77.2	150	0
Pavement Scarafier	No	20		89.5	150	0

Pavement Scarafier	No	20	89.5	150	0
Roller	No	20	80	150	0
Roller	No	20	80	150	0

	Calculated (dBA)		Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night							
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Paver	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pavement Scarafier	80	73	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	70.5	63.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 6/5/2020
Case Description: Architectural Coatings

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	240	0
Compressor (air)	No	40		77.7	240	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	63.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	63.6	60.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	75.9	72.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
South	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	67.7	64.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	80	77	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

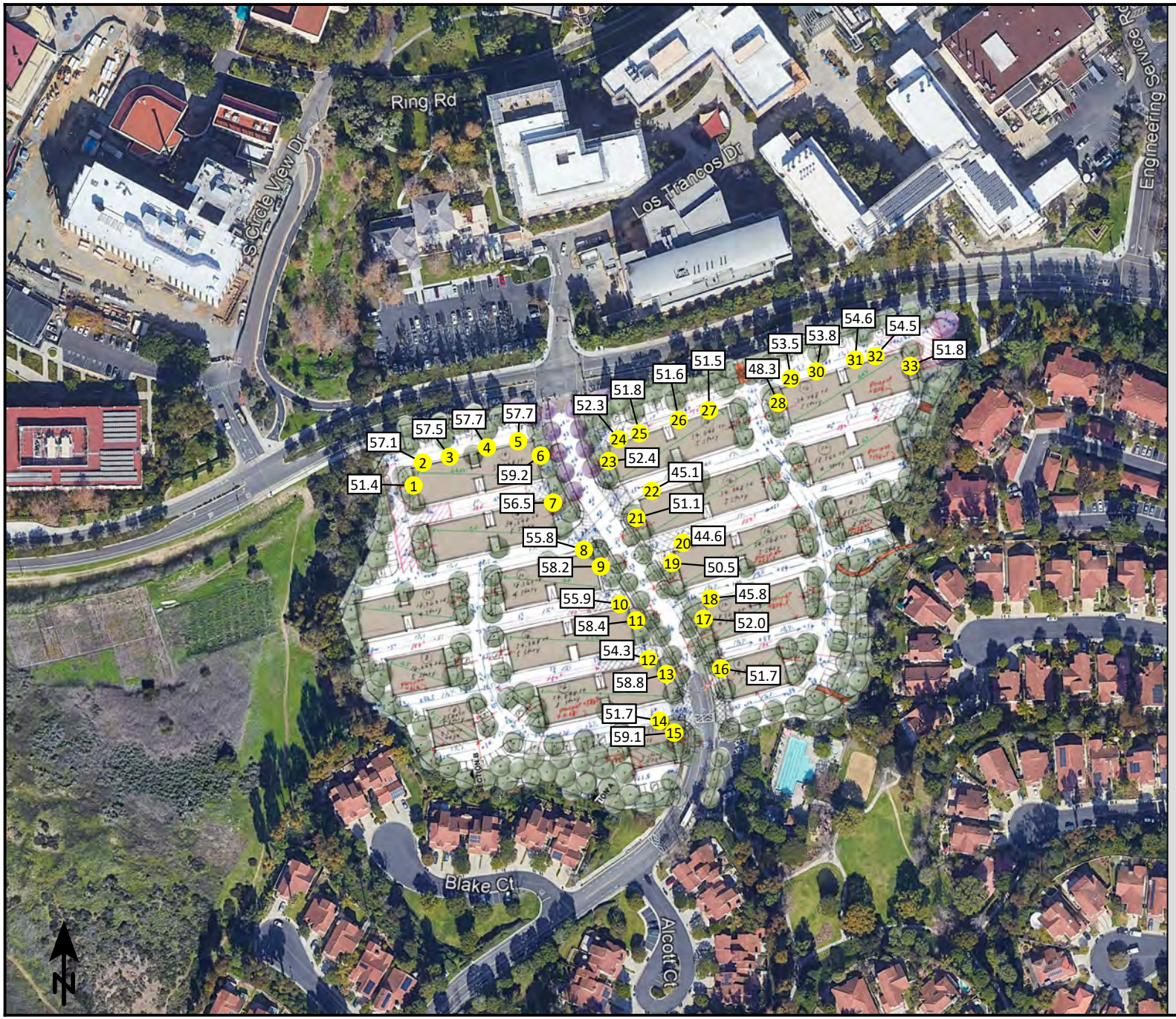
Description	Land Use	Baselines (dBA) Daytime	Evening	Night
East	Residential	60	55	50

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	150	0
Compressor (air)	No	40		77.7	150	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor (air)	68.1	64.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	68.1	67.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.



University Hillls Area 12

Signs and symbols

Receiver

Traffic Noise Source

Roadway Surface

0 50 100 200 300 400 feet

APPENDIX E

Tranportation Study

University Hills - Area 12 Housing Project Transportation Study

University of California, Irvine

September 3, 2021

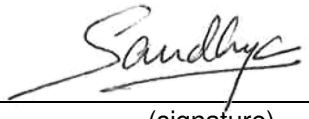
Prepared for:

Irvine Campus Housing Authority

Prepared by:

Stantec Consulting Service Inc.

This document entitled University Hills - Area 12 Housing Project Transportation Study was prepared by Stantec Consulting Services Inc. (“Stantec”) for the account of Irvine Campus Housing Authority (the “Client”).

Prepared by  (signature)

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Principal, Transportation Planning and Traffic Engineering
(949) 923-6058

September 2021

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1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) has performed a transportation impact analysis for the proposed University of California Irvine (UCI) University Hills – Area 12 Housing (Project). The purpose of this study is to determine if significant impacts related to transportation would occur with the implementation of the proposed Project. This analysis was prepared in support of the Initial Study Mitigated Negative Declaration (IS/MND) in accordance with the California Environmental Quality Act (CEQA) and focuses on vehicle miles traveled (VMT) as the primary metric for identifying significant impacts.

1.1 PROJECT DESCRIPTION

The Project site is located south of the East Peltason Drive and Los Trancos Drive intersection in UCI's main campus, as shown in **Figure 1-1**. The site is currently occupied by the Las Lomas apartment complex that consists of 100 multi-family dwelling units designated for faculty and staff housing.

The Project would demolish the existing 100 faculty/staff multi-family units within the Las Lomas apartment complex and construct up to a maximum of 220 for-sale faculty/staff multi-family units on the approximately 9.8-acre site, in two phases, Phases 1 and 2. Phase 1 would demolish 50 units within Las Lomas multi-family faculty//staff housing east of Los Trancos to construct approximately 110 for-sale multi-family homes. While Phase 1 is under construction, the 50 units within Las Lomas located west of Los Trancos would be used as undergraduate student housing with anticipated double occupancy for each of the bedrooms. There are currently 112 bedrooms within the westside of Las Lomas, therefore the anticipated occupancy is 224 students. This is a temporary use only and students would be vacated approximately by 2023/24. Once Phase 1 is completed, Phase 2 would demolish the 50 units within Las Lomas located west of Los Trancos to construct 110 for-sale multi-family homes on the approximately 4.4-acre site.

The UCI Long Range Development Plan (LRDP) development program for Faculty and Staff Housing would be amended to increase the capacity from 1,700 units to a capacity of 1,830 units, an overall increase of 130 units.

Additional site improvements would include grading, internal roadways and access, surface and structured parking, driveway paving, construction of internal on-site circulation, landscaping, installation of site utility connections, lighting, pedestrian walkways and trail systems and water quality improvements.

The Project includes pedestrian circulation and access improvements, including those required to comply with the American with Disabilities Act (ADA). On-site pedestrian walkways and trails will serve all buildings and provide connections to off-site pedestrian systems. On-site bicycle circulation and access will be provided on shared vehicle/bicycle access roads to provide connections to the UCI, City and regional bike trail network. A new pedestrian bridge over East Peltason Drive near the Project site is proposed as part of the Project. On-site bicycle parking hubs will be provided in key locations to service bicycle commuters. The Project's proposed site plan is illustrated in **Figure 1-2**.

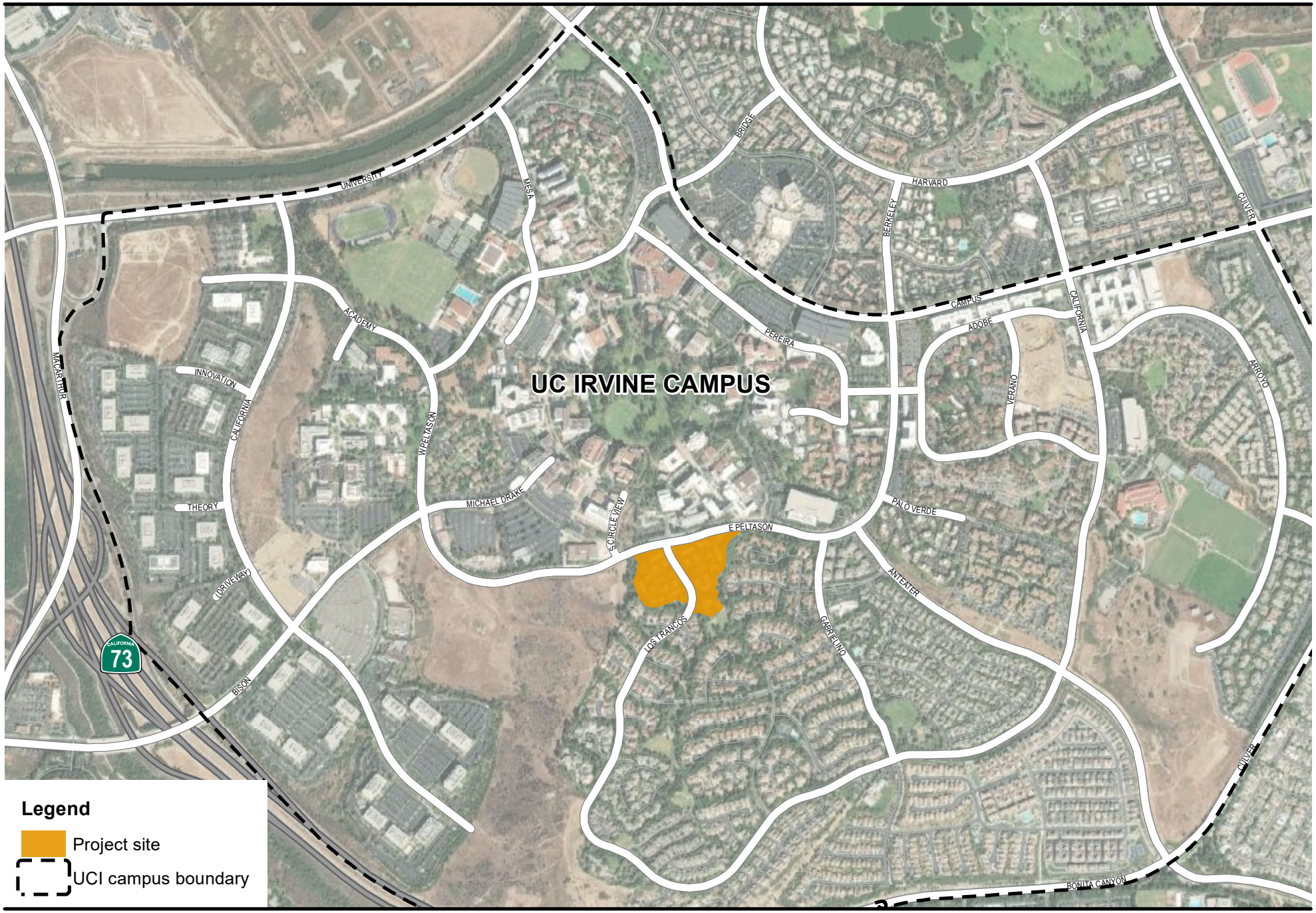

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Figure 1-1

Project Location

1.2

Figure 1-2

Proposed Project Site Plan

1.1.1 UCI Long Range Development Plan

The current UCI LRDP was adopted in 2007 and established a land use plan and physical planning framework to accommodate projected enrollment levels, additional academic facilities and housing, and the on-campus circulation system through the 2025-2026 horizon year. The Project site is designated as Faculty and Staff Housing in the LRDP and is located within two traffic analysis zones (TAZ) that include land uses for Faculty and Staff 2-Bedroom Apartments, Faculty and Staff 3-Bedroom Apartments, Faculty and Staff Single Family Detached Housing in the LRDP Traffic Study. Since the Project would redevelop the existing Las Lomas apartment complex, any new units above 100 units represents an increase to the total number of Faculty and Staff housing units in the LRDP.

According to the 2007 LRDP, "UCI's strategic plan for academic development concluded that faculty housing is crucial for recruitment and hence should be the highest priority housing types". In 1983, The Regents approved the establishment of the Irvine Campus Housing Authority (ICHA). The ICHA administers the housing program, including assessing faculty and staff housing needs on the UCI campus. As stated in the 2007 LRDP, the ICHA has assisted in the development of nine phases of faculty and staff housing in University Hills, which is the on-campus community-in-residence established under a ground lease from The Regents.

At the time of the 2007 LRDP, University Hills consisted of 1,108 dwelling units (240 apartment units and 868 for-sale housing units) on approximately 202 acres, at an average density of 5.5 dwelling units per acre. The 2007 LRDP included an additional 142 dwelling units, increasing the density of new housing built to approximately 12 units per acre (for a total of 1,250 units). The 2007 LRDP also identifies a Housing Reserve on the East Campus of approximately 250 dwelling units. The total number of Faculty and Staff Housing dwelling units in the 2007 LRDP for the Campus overall is 1,700 dwelling units.

Table 1-1 summarizes the current LRDP and the proposed increase in faculty housing with the Project and LRDP amendment.

Table 1-1 Faculty and Staff Housing Summary

Description	Amount
Current LRDP Faculty and Staff Housing (including Housing Reserve)	1,700 Units
Amendment to LRDP Faculty and Staff Housing	1,830 Units (+130)[1]
[1] Includes Project total of 220 multi-family units where 100 units would replace existing units and 120 new units would be constructed.	

1.2 PROJECT SITE ACCESS

Access to the Project can be made by vehicle, by bicycle, and by walking, primarily via Los Trancos Drive and East Peltason Drive. The intersection of Los Trancos Drive and East Peltason Drive is signalized, and marked crosswalks are present across the north (Los Trancos Drive), east (East Peltason Drive), and south (Los Trancos Drive) legs. Project driveways intersecting with Los Trancos Drive will provide vehicular access to the residential units. Sidewalks and shared use pathways will be provided on-site, which will link to those on Los Trancos Drive and East Peltason Drive, providing pedestrian and bicycle access. A new pedestrian bridge is proposed over East Peltason Drive near the Project site to enhance pedestrian and bike access to the academic core.

The previously referenced **Figure 1-2** shows the proposed site access configurations in relation to the existing setting.

1.3 EXISTING ROADWAY SYSTEM

The UCI campus is located in the southwest portion of the City of Irvine and is adjacent to the City of Newport Beach. The following are general descriptions of the roadways in the Project area.

Los Trancos Drive begins at East Peltason Drive and passes directly through the Project site with a posted speed limit of 25 mph, providing two vehicular travel lanes (one lane in each direction) and Class II bike lanes. Los Trancos Drive continues to travel in a southerly direction and changes names to California Avenue at Locke Court.

West Peltason Drive begins opposite Bridge Road at Campus Drive and makes a counterclockwise loop around the UCI main campus. At Michael Drake Drive, it changes names to East Peltason Drive and continues until reaching Campus Drive where it becomes Berkeley Avenue in the City of Irvine. East Peltason Drive provides two vehicular travel lanes near the Project site with a posted speed limit of 35 mph. Adjacent to the Project site, East Peltason provides a striped bike lane and on-street parking is not allowed.

Bison Avenue between State Route 73 and California Avenue is designated as a Primary Arterial on the City of Irvine and the Orange County Master Plan of Arterial Highways (MPAH). Bison Avenue provides four vehicular travel lanes, bike lanes, a raised median and the posted speed limit is 40 mph. At California Avenue, Bison Avenue changes names to Michael Drake Drive.

Anteater Drive begins at East Peltason Drive and the posted speed limit is 40 mph in the vicinity of the Project site where there are two vehicular travel lanes provided as well as Class II bike lanes. Anteater Drive travels in a generally southeast direction until reaching Bonita Canyon Drive/Culver Drive, where it changes names to Shady Canyon Drive in the City of Irvine. On-street parking is not allowed.

Campus Drive is designated as a Primary Arterial on the City of Irvine and the Orange County Master Plan of Arterial Highways (MPAH). Campus Drive begins at Bristol Street and runs in a generally northeast direction until reaching MacArthur Boulevard where it continues in a southeast direction to east of Culver Drive. Campus Drive provides four vehicular travel lanes with a raised median through the study

area and represents the northeast boundary of the UCI main campus. The posted speed limit is 45 mph, on-street parking is not allowed, and a striped Class II bike lane is provided.

Los Trancos Drive changes names to California Avenue at Locke Court where it continues in a generally easterly direction until Anteater Drive where it turns toward the north and terminates north of the UCI campus at Harvard Avenue in the City of Irvine. California Avenue is designated as a Primary Arterial and is a two-lane roadway between Los Trancos Drive and Adobe Circle South and a four-lane roadway north of Adobe Circle South. On-street parking is prohibited, and a striped Class II bike lane is provided. The posted speed limit is 35 mph south of Anteater Drive and 40 mph north of Anteater Drive.

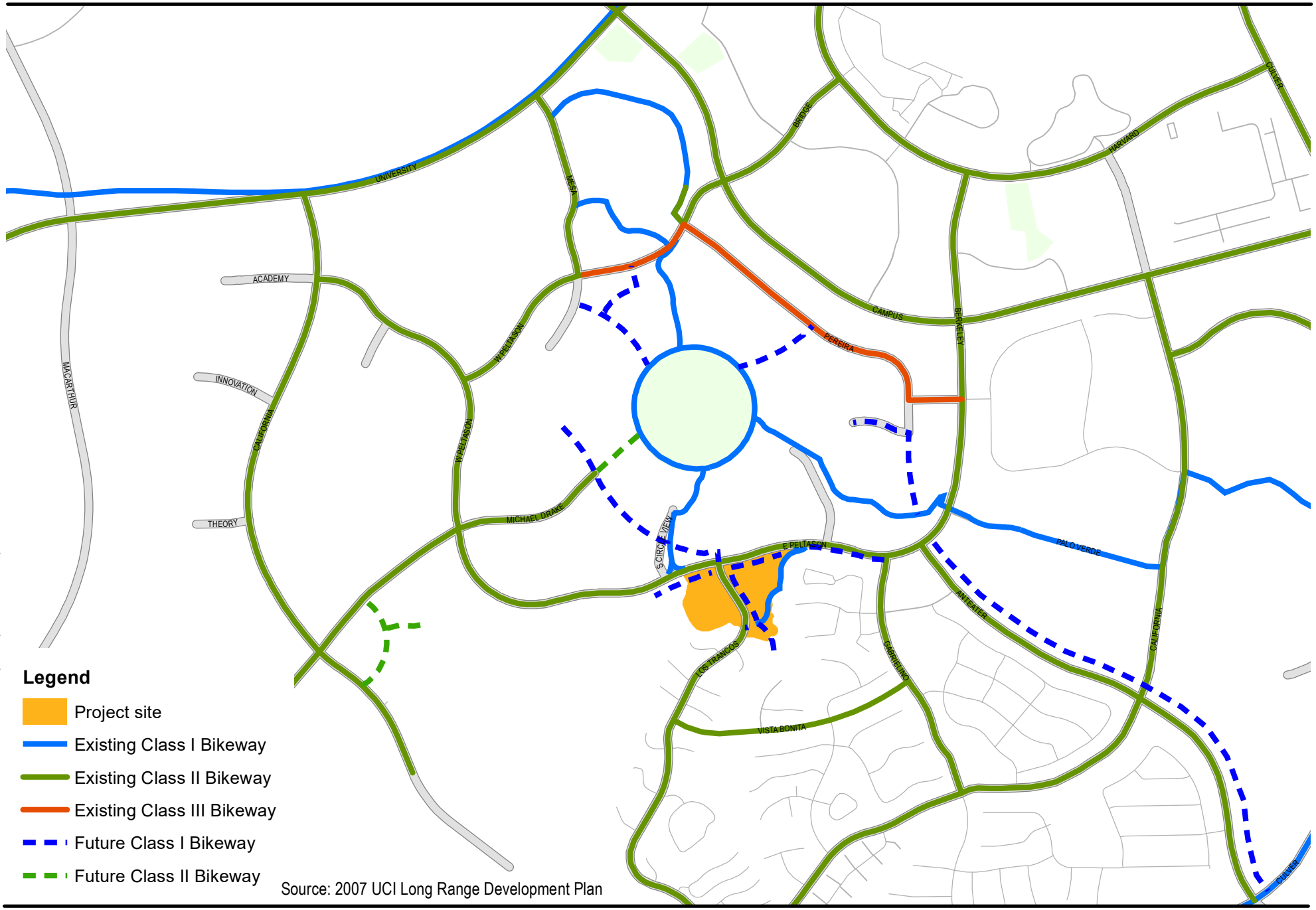
1.4 EXISTING TRANSIT AND ACTIVE TRANSPORTATION

Active transportation is well supported in the Project vicinity, with sidewalks and on-street bicycle lanes provided on both sides of Los Trancos Drive and East Peltason Drive, which connect with on-campus locations as well as the extensive City of Irvine bicycle infrastructure network (see **Figure 1-3**). UCI has a robust bicycle program that promotes bicycle transportation. In addition to bicycle infrastructure, UCI has BikeUCI Ambassadors, a Bicycle Advisory Group, and Bicycle Education and Enforcement (B.E.E.P). Generally, all campus facilities are easily accessible by bicycle due to the comprehensive network of pathways throughout the campus.

There are existing bike lanes on Campus Drive, East Peltason Drive, West Peltason Drive, California Avenue, Arroyo Drive, Adobe Circle South, Verano Road, Anteater Drive, Academy Way, Bridge Road and Bison Avenue that create a bicycle network to get in and around campus. The bike lanes on the streets noted above connect to the City of Irvine's bicycle network**.** The City of Irvine's 2015 Active Transportation Plan shows that the existing bicycle facilities around the UCI campus, with the exception of Campus Drive, are low stress facilities, meaning the level of stress a bicyclist feels while using the facilities are low. The low level of stress creates a more pleasurable and appealing ride that would encourage students to ride their bike to get around campus.

In addition, UCI is a gold level "Bicycle Friendly University" and offers bicycle facilities, education and amenities such as bike registration, parking racks, bike festival, low-cost bike sales, self-service bike repair stands and air pumping stations, and bike shops. Additionally, a new pedestrian bridge over East Peltason Drive near the Project site is proposed as part of the Project.

The Project is located near bus stops on East Peltason Drive utilized by the Anteater Express transit service. These stops are located at South Circle View Drive and the Engineering Service Road approximately 1,200 feet and 1,100 feet from the project site, respectively. Anteater Express provides access to destinations both on and off the UCI campus, and provides a connection to OCTA bus stops. OCTA provides services to the wider network, including Tustin Metrolink Station (see **Figure 1-4**).



Source: 2007 UCI Long Range Development Plan

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Figure 1-3

City of Irvine Bicycle Networks

1.7

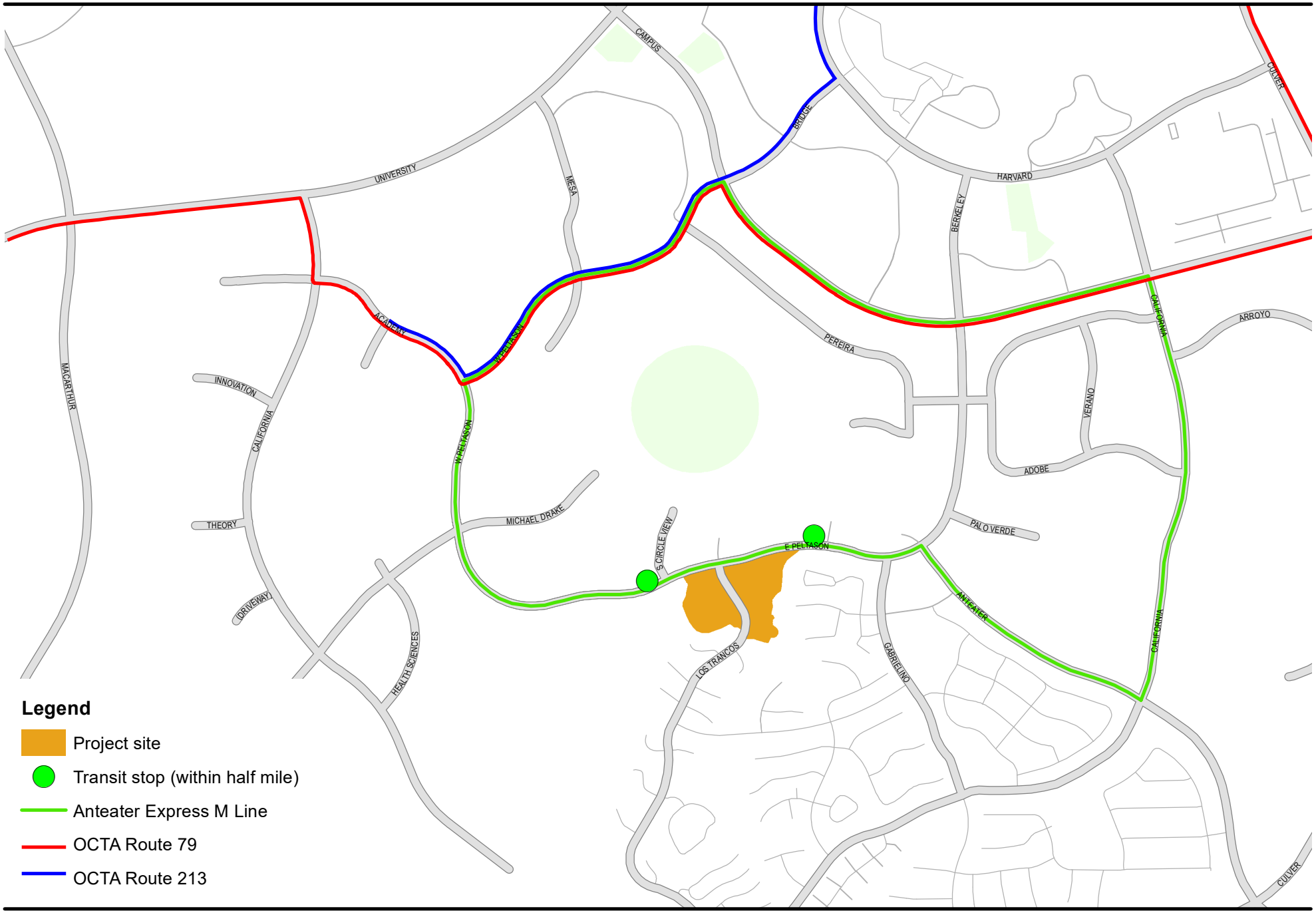

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Figure 1-4

Transit Routes and Stops Near Project Site

2.0 TRANSPORTATION IMPACT ANALYSIS METHODOLOGY

Under CEQA, administrative regulations and guidelines are set forth that explain how to determine whether an activity (i.e., proposed project) is subject to environmental review, the steps to undertake the review, and the required content of the review. Since the original CEQA, subsequent legislations have updated the CEQA guidelines to better achieve the State's efforts to improve air quality and reduce greenhouse gas emissions (GHG) through transportation planning. Updated CEQA guidelines have gone into effect statewide that include sections created by Senate Bill 743 (SB 743). The University of California has adopted the new CEQA guidelines making VMT the primary metric for evaluating transportation impacts.

2.1 SIGNIFICANCE THRESHOLDS

SB 743 requires the Governor's Office of Planning and Research (OPR) to establish recommendations for identifying and mitigating transportation impacts within CEQA. Generally, SB 743 moves away from using delay-based level of service as the primary metric for identifying a project's significant impact to instead use vehicle miles traveled (VMT). The final Technical Advisory released by OPR in December 2018 provides guidance on evaluating transportation impacts and VMT and is the guidance on which this VMT analysis is based on.

Prior to undertaking a full VMT analysis, OPR's Technical Advisory advises that lead agencies conduct a screening process "to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study". The screening criteria that is used in this analysis is described later in this chapter.

When conducting a VMT analysis, OPR's Technical Advisory recommends significance thresholds that may constitute a significant transportation impact. These recommended significance thresholds are summarized in **Table 2-1.**

Table 2-1 OPR Technical Advisory Recommended Significance Thresholds

Development Type:	**Metric:**	**Threshold:**
Residential development	Household VMT per capita	15% less than existing city household VMT per capita or regional household VMT per capita
Office development	VMT per employee	15% less than existing regional VMT per employee
Retail development	Total VMT	If project causes a net increase in total VMT
Other project types	To be determined by lead agency through consideration of the purposes of the legislation (i.e., reductions to GHG, VMT per capita, and automobile trip generation)	

Source: Technical Advisory on Evaluating Transportation Impacts on CEQA, California's Office of Planning and Research, December 2018.

If a significant impact is identified utilizing the aforementioned significance thresholds, mitigation must be identified.

Under OPR's Technical Advisory recommendations, lead agencies have the discretion to set or apply their own thresholds of significance or rely on thresholds recommended by other agencies. The University of California has adopted the new CEQA guidelines making VMT as the metric for evaluating transportation impacts. However, each campus has the discretion to utilize their own thresholds of significance based on their location.

Since UCI is located within the City of Irvine, in some cases significance thresholds set by the City are appropriate for UCI. The City of Irvine has adopted VMT Impact Analysis Guidelines that are generally consistent with OPR's Technical Advisory recommendations. The City has updated the Irvine Traffic Analysis Model TransCAD Version (ITAM TC) for use in VMT analyses of this type and it includes a VMT tool for use when evaluating development projects.

Per the City of Irvine Guidelines, the impact analysis methodology is consistent with Section 15064.3 of the CEQA Guidelines. ITAM TC is used to calculate VMT statistics for both No Project and With Project conditions. For this analysis, two model scenarios are evaluated — a No Project run and a With Project run. The net difference in VMT between the With Project run and the No Project run represents the VMT attributable to the project. This takes into account both direct and indirect effects of the project as trips are redistributed throughout the highway network based on the effect of the Project. The net difference in VMT and the net difference in population or employees due to the Project are used to calculate a "project change VMT rate" on a per capita basis (VMT per population and VMT per employee). A project that results in a net change VMT rate that is below the applicable significance threshold does not result in a significant impact. A project that results in a project net change VMT rate that is above the applicable significance threshold is deemed significant and requires mitigation.

The City of Irvine methodology utilizes VMT statistics at a countywide level based on an existing condition baseline in order to account for both the direct and indirect effects of the project, as noted above, since trips are redistributed throughout the highway network due to the effect of the Project.

Table 2-2 summarizes the City of Irvine's significance thresholds.

Table 2-2 City of Irvine Significance Thresholds

Development Type	Metric	Significance Threshold Description	Existing Ave. VMT per capita	Significance Threshold (15 percent reduction from average)
Residential project	VMT per population	15% less than existing countywide average residential VMT per capita	17.5 VMT per population	14.9 VMT per population
Non-residential project	VMT per employee	15% less than existing countywide average VMT per employee	48.8 VMT per employee	41.5 VMT per employee
Mixed-use projects	Each use evaluated separately per above			
Source: CEQA Manual Volume III. Technical Appendices, City of Irvine, April 2020				

OPR's Technical Advisory specifically recommends using VMT per capita (per population) as the metric for evaluating residential developments and advises local agencies to establish an appropriate method of analysis for projects that fit the residential category. The City of Irvine Guidelines utilizes VMT per capita (per population) as the metric for all residential projects. The residential significance threshold is based on the countywide residential VMT trips divided by the countywide population. Since OPR's Technical Advisory defers selection of an appropriate criteria to the local agency, the City of Irvine methodology and significance thresholds, which are appropriate for a project consisting of residential use, is utilized in this analysis.

Since the project consists entirely of residential uses, the Project is classified as a residential project and the VMT per capita (per population) metric is applicable. As shown in **Table 2-2**, the existing countywide average for residential use is 17.5 VMT per capita (per population) and the significance threshold established by the City of Irvine is 14.9 VMT per capita (per population), which is 15 percent lower than the existing average.

The nearby City of Newport Beach has also adopted VMT guidelines, which are also generally consistent with OPR's Technical Advisory recommendations. However, for analysis of the Project, ITAM TC represents a suitable methodology since the Project is located within the ITAM TC primary modeling area.

In addition to the quantitative analysis, a qualitative analysis of the Project's potential transportation impacts has also been conducted. The quantitative analysis was prepared as described above, and a qualitative significance criteria has been established to evaluate the Project's compatibility with the statutory goals for the VMT metric. The following are the VMT metric's three statutory goals as stated in OPR's Technical Advisory:

1. The reduction of GHG.
2. The development of multimodal transportation networks.
3. A diversity of land uses.

The significance criteria utilized here for qualitative analysis is summarized in **Table 2-3**. Differences between OPR's Technical Advisory and City of Irvine's Guidelines are also noted in **Table 2-3**.

If a significant impact is identified, feasible mitigation measures are identified based on substantial evidence, such as that from the California Air Pollution Control Officers Association's (CAPCOA) Comprehensive Report for Quantifying Greenhouse Gas Mitigation Measures. The CAPCOA document provides 54 travel demand management (TDM) strategies associated with the reductions of VMT and GHG emissions and is an appropriate resource for this type of analysis.

Table 2-3 VMT Significance Criteria

Category	Criteria/Screening	Threshold
1. Screening Thresholds	OPR's Technical Advisory and the City of Irvine's VMT Guidelines provides screening thresholds for land use projects. These screening thresholds include: 1. Trip generation screening – Small projects can be screened out from completing a full VMT analysis. 2. Map-based screening – Projects that are located in areas with low VMT can be screened out from completing a full VMT analysis. 3. Proximity to transit – Projects within ½ mile of a major transit stop or a stop located along a high-quality transit corridor reduce vehicle miles traveled and therefore can be screened out from completing a full VMT analysis. The Project must also meet additional criteria regarding Floor Area Ratio, parking, affordable housing units, and consistency with the applicable Sustainable Communities Strategy. 4. Locally-serving retail – Retail that is 50,000 square feet or smaller are generally considered locally serving and can be screened out from completing a full VMT analysis. 5. Affordable residential development – 100% affordable housing in infill locations can be screened out from completing a full VMT analysis. Evaluate the Project using the screening thresholds.	1. Per OPR Technical Advisory, if the Project generates less than 110 trips per day, the Project is assumed to have a less than significant impact. The City of Irvine utilizes a threshold of 250 trips per day. 2. Per OPR Technical Advisory, if the Project is in a low VMT area, the Project is assumed to have a less than significant impact. The City of Irvine does not use the map-based screening criteria. 3. Per OPR Technical Advisory, If the Project is within ½ mile of a high-quality transit stop/corridor, and meet the other four requirements, the Project is assumed to have less than significant impact. The City of Irvine has identified two Transit Priority Areas (TPA) in the City. 4. Per OPR Technical Advisory, if the retail component of the Project is less than 50,000 then the retail component is assumed to have a less than significant impact. The City of Irvine considers retail of 100,000 or smaller as locally serving. 5. Per OPR Technical Advisory and the City of Irvine, if the Project consists of 100% affordable units and is located in an infill location, then the Project is assumed to have less than significant impact.
2. VMT Analysis	Evaluate the Project's VMT per capita and compare to threshold of significance. Since the City of Irvine's Guidelines specify uses such as the proposed residential Project, the City of Irvine's impact analysis methodology and significance thresholds are used in this analysis.	Refer to **Table 2-2** for City of Irvine significance thresholds.

3. Multi-modal transportation	Providing alternative modes of transportation that has high accessibility and connectivity reduces VMT, reduces single occupancy vehicles, and reduces VMT per capita. Identify existing pedestrian, bicycle and transit facilities that provide alternative modes of transportation in place of a single-occupancy vehicle. Evaluate the accessibility and connectivity of pedestrian, bicyclist, and transit facilities around the Project site.	If the Project restricts access or alters a route, this may indicate a significant impact.
4. Diversity of land uses	Interactions between different land uses and interactions between land use and transportation have the potential to reduce VMT. Evaluate the surrounding uses of the Project and the interaction between land use and transportation.	If the Project is complementary and consistent with the existing land use patterns, then the Project is assumed to have a less than significant impact.
5. RTP/SCS Consistency	The purpose of the RTP/SCS is to evaluate regional land use patterns and transportation systems to achieve the State's target GHG emissions reduction goals. Evaluate if the Project is consistent with the RTP/SCS. The Project's cumulative effects are determined through consistency with the RTP/SCS, If the Project is consistent with the RTP/SCS then the Project does not result in a cumulative significant impact.	If the Project is consistent with the RTP/SCS, then the Project would have less than significant cumulative impact. If the Project is inconsistent then the inconsistency should be evaluated for a significant impact on transportation.

3.0 TRANSPORTATION IMPACT ANALYSIS

3.1 SCREENING EVALUATION

Prior to undertaking a detailed VMT study, OPR's Technical Advisory advises that lead agencies conduct a screening process "to quickly identify when a project should be expected to cause a less-than-significant impact without conducting a detailed study". OPR suggests that lead agencies may presume a project has a less than significant impact on VMT using project size, maps, transit availability and provision of affordable housing. The City of Irvine Guidelines utilizes a similar screening criteria. As discussed in Chapter 2.0, above, for this analysis the Project has been evaluated considering both OPR's Technical Advisory and the City of Irvine's screening process.

3.1.1 Trip Generation Screening

OPR's Technical Advisory recommends that small projects that generate less than 110 trips per day generally may be assumed to cause a less-than significant transportation impact. The City of Irvine Guidelines utilizes a threshold of 250 trips per day. Trips generated by the proposed Project were estimated using trip rates from the UCI Main Campus Traffic Model (MCTM). Trip rate and trip generation calculation sheets are included in **Appendix A**. **Table 3-1** summarizes the trip rates and corresponding estimated trip generation for the proposed Project.

Table 3-1 Trip Generation Summary

			AM Peak Hour			PM Peak Hour			
Land Use	**Amount**	**Units**	**In**	**Out**	**Total**	**In**	**Out**	**Total**	**ADT**
Trip Rates									
Faculty/Staff Housing (2-bedroom)	DU		0.038	0.398	0.436	0.345	0.210	0.555	7.5
Faculty/Staff Housing (3-bedroom)	DU		0.045	0.477	0.522	0.414	0.252	0.666	9.0
Trip Generation									
Existing									
Las Lomas Apartment Complex (2-bedroom)	78	DU	3	31	34	27	16	43	585
Las Lomas Apartment Complex (3 -bedroom)	22	DU	1	10	11	10	5	15	198
Total - Existing	***100***	***DU***	***4***	***42***	***46***	***37***	***21***	***58***	***783***
Proposed									
Faculty/Staff Housing (3-bedroom)	220	DU	10	105	115	91	55	146	1,980
Net Increase in Trips			**6**	**63**	**69**	**54**	**34**	**88**	**1,197**

Trip Rate Source: UCI Main Campus Traffic Model (MCTM)
ADT = average daily trips
DU = dwelling unit

As shown in **Table 3-1** the Project (220 multi-family units) would generate approximately 1,980 daily trips, 115 trips during the AM peak hour and 147 trips during the PM peak hour. When accounting for the existing trips from the Las Lomas apartment complex (100 multi-family units) that will be removed, the Project would result in a net trip increase of 1,197 daily trips, 69 trips in the AM peak hour and 89 trips during the PM peak hour.

Since the proposed Project is estimated to generate more than 110 trips per day (as well as more than the City's threshold of 250 trips per day), the Project does not qualify as a small project that can be presumed to be less than significant.

3.1.2 Map-Based Screening

OPR's Technical Advisory recommends that residential and office projects located in areas with low VMT per capita, and that incorporate similar features, will exhibit similarly low VMT per capita, therefore there will be no significant impacts to VMT.

The City of Irvine does not use a map-based resource for identifying areas in the City with low VMT per capita. Therefore, this screening threshold has not been used for the proposed Project.

3.1.3 Proximity to High Quality Transit

OPR's Technical Advisory suggests that a project can be presumed to have a less than significant impact on VMT if the project is within a half-mile of an "existing major transit stop or an existing stop along a high-quality transit corridor". A major transit stop is defined as "the intersection of two or more major bus routes with a frequency service interval of 15 minutes or less during the morning and afternoon peak commute periods". A high-quality transit corridor is defined as an existing corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. Based on this definition, the proposed Project would be eligible to be "screened out" under this threshold.

Anteater Express is UCI's transit system that provides transportation to various areas on and off the UCI Campus. Anteater Express is an attractive mode of transportation because of the short distance between stops and reasonable fares. UCI also provides enhanced services that increases the ease of using the shuttle service such as the on-line Live Bus Tracking system that give real time data of the buses in service. An application is also available for download that allow users to view the shuttle's location. UCI also offers a Medical Center shuttle that is available to students, faculty, and staff.

Two Anteater Express stops are located on East Peltason Drive less than a quarter mile from the proposed Project, providing access to the Anteater Express M Line. These stops are located at South Circle View Drive and the Engineering Service Road approximately 1,200 feet and 1,100 feet from the Project site, respectively. Headways for the M Line are 6 to 10 minutes during the day and 25 minutes after 7:00 PM. Therefore, the Anteater Express M line would be considered a high-quality transit corridor since service intervals are no longer than 15 minutes during peak on-campus commute hours and two M line bus stops are located less than a quarter mile from the Project site.

In addition, OCTA operates bus transit services to the UCI campus area, though stops nearest the Project site are located approximately 0.8 miles away (see **Figure 1-4** for map). The OCTA stop located at the intersection of East Peltason Drive and Campus Drive can be accessed via the Anteater Express M Line, providing transit access to the wider network.

Since the Project is located along a high-quality transit corridor, the Project is presumed to have a less-than-significant impact on transportation.

The City of Irvine utilizes a similar screening criteria for projects located near high-quality transit. The city has identified two existing Transit Priority Areas (TPA) in the city. The first TPA is a half mile radius around the Tustin Metrolink Station, and the second TPA is a half mile radius around the Irvine Metrolink Station. Therefore, the Project would not be eligible to be screen out under the City's criteria.

3.1.4 Affordable Housing

OPR's Technical Advisory and the City of Irvine's Guidelines state that affordable housing projects located in infill locations can be assumed to have a less than significant impact. The proposed Project does not apply to this screening threshold.

3.2 VMT ANALYSIS

As shown in Section 3.1.3, above, the Project has a less than significant impact on transportation based on the transit proximity screening criteria. However, the Project site is not in an area recognized by the City of Irvine as a Transit Priority Area that satisfies the City's transit screening criteria. Therefore, for information purposes only, a detailed VMT analysis has been prepared to show the Project's effect on regional VMT. For this analysis, the City of Irvine's Guidelines are used, which are generally consistent with the OPR recommended methodology as discussed above. The City of Irvine's Guidelines specify significance thresholds for two categories, residential and non-residential projects. The City of Irvine's impact analysis methodology and significance thresholds for a residential project are utilized (see previously referenced **Table 2-2** for City of Irvine significance thresholds).

Two aspects of the Project are analyzed. First, the proposed development of 220 multi-family residential units for UCI faculty and staff are evaluated, and second, the proposed LRDP amendment to increase the total amount of Faculty and Staff Housing dwelling units from 1,700 units to 1,830 units (an increase of 130 units)

3.2.1 Faculty/Staff Housing Project Analysis

As previously mentioned, the City of Irvine's impact analysis methodology involves using ITAM TC to estimate the net change in VMT when the Project is added to existing baseline conditions. The net change in VMT and net change in population or employment is used to calculate what is referred to as the "Project change VMT rate" measured on a per capita basis (VMT per population or VMT per employee). The Project change VMT rate is then compared to the applicable significance threshold. A project that results in an increase above the significance threshold may be deemed significant and mitigation is required.

The Project is located within two ITAM TC TAZ zones—TAZ 625 and TAZ 629. The Project's land uses were added to the TAZ zones existing conditions (2018 baseline) and a full ITAM TC run was conducted and the ITAM TC VMT tool was used to estimate VMT for conditions with the Project. Per City of Irvine Guidelines, the net change in total countywide residential VMT and the net change in total population are used to estimate the Project change VMT rate per capita based on the existing condition as a baseline. As discussed in Section 2.1 above, this methodology of using the net change in countywide totals, as opposed to the Project's location by TAZ, captures both the direct and indirect effects of the Project as trips are redistributed throughout the highway network due to the effect of the Project.

Table 3-2 summarizes the ITAM TC VMT estimates for conditions with and without the Project.

Table 3-2 ITAM TC VMT Estimates for 220 Unit Faculty/Staff Project

Area	Category	Baseline (No Project)	Baseline (With Project)	Net Change
Residential VMT				
Orange County	Residential VMT	56,338,915	56,345,727	6,812
	Population	3,218,615	3,219,213	598
Project Change VMT Rate (Residential VMT per Population)				11.39
Employment VMT				
Orange County	Employment VMT (Non-Residential)	83,065,931	83,063,454	-2,477
Project = 220 multi-family units for faculty and staff (See **Appendix B** for the ITAM TC Project VMT Summary Report Worksheet).				

As shown in **Table 3-2**, ITAM TC estimates that the net change of non-residential VMT is 6,812 under conditions with the Project. ITAM TC also estimates that the Project would result in a net increase in population of 598 with the Project. Therefore, the net change in population VMT and total population results in a Project change VMT rate of 11.39 VMT per capita (per population).

ITAM TC estimates also show that employment VMT is reduced with the addition of the Project. Employment VMT reduces overall due to the Project since the location of the Project facilitates commute trips by walking and biking for Project residents who are UCI employees. Without the Project, these employees would have to live further from campus, and would be more likely to commute by automobile, thereby increasing VMT.

Table 3-3 provides a comparison between the Project VMT per capita (per population) and the significance threshold.

Table 3-3 VMT Impact Summary for 220 Unit Faculty/Staff Project

Description	VMT per Capita
Project VMT Rate (per Capita)	11.4
Countywide Average (Baseline)	17.5
Threshold of Significance (Baseline minus 15%)	14.9
Difference from Threshold of Significance	-3.5

Is Project above or below Regional Threshold?	Below
Significant Impact?	No

As shown, the Project results in a VMT per capita (per population) of 11.4. The threshold of significance is 14.9 VMT per capita (per population). The Project VMT is lower than the regional average and the threshold of significance. Therefore, the Project would not result in a significant impact (see **Appendix B** for the ITAM TC Project VMT Summary Report Worksheet).

3.2.2 LRDP Amendment Analysis

The LRDP development program for Faculty and Staff Housing would be amended to increase the capacity from 1,700 units to a capacity of 1,830 units, an overall increase of 130 units.

For this analysis, VMT data corresponding to LRDP buildout conditions is utilized. First, the current LRDP is analyzed using ITAM TC to determine the corresponding VMT characteristics associated with building out the University as currently envisioned by the LRDP. Second, the proposed increase in faculty and staff housing is analyzed using ITAM TC and compared to the current LRDP.

Table 3-4 summarizes the ITAM TC VMT estimates for conditions with and without the change to the LRDP.

Table 3-4 ITAM TC VMT Estimates for LRDP Amendment

Area	Category	Baseline with Current LRDP	Baseline with LRDP Amendment	Net Change
Residential VMT				
Orange County	Residential VMT	56,376,796	56,380,405	3,609
	Population	3,227,570	3,227,924	354
Residential VMT per Population		17.467	17.466	-0.001
Employment VMT				
Orange County	Employment VMT (Non-Residential)	83,386,000	83,384,122	-1,878

As shown in **Table 3-4**, ITAM TC estimates that the net change of residential VMT is 3,609 with the LRDP amendment. ITAM TC also estimates that the Project would result in a net increase in population of 354 and the amount of VMT per capita reduces with the LRDP amendment. The LRDP amendment also results in a net reduction of employment VMT. Therefore, the proposed LRDP amendment would not result in a significant impact.

3.3 MULTIMODAL TRANSPORTATION NETWORKS ANALYSIS

The Project has also been evaluated qualitatively with consideration to the multimodal transportation network to evaluate the Project's compatibility with the statutory goals for the VMT metric.

As discussed in Section 2.1, above, another goal of utilizing the VMT metric for evaluation of transportation impacts is to facilitate the "development of multimodal transportation networks". A multimodal transportation network provides opportunities for people to safely get to their destinations by means other than a single occupancy vehicle. Multimodal networks are a component of a "Complete Street" that address the needs of pedestrians, bicyclists, transit riders and motorists. The development of multimodal features within a development project is a TDM strategy listed by CAPCOA that would reduce VMT and GHG emissions. OPR also notes that the increase in transit ridership "should not be considered an adverse impact", noting that while the increase in ridership may slow transit service, it adds accessibility, destinations and proximity. When choices in transportation are available, single occupancy vehicle VMT is reduced. Projects that block access, remove, or interfere with pedestrian paths, bicycle paths, or transit stops would have a significant impact on VMT.

The Project is accessible by Class II Bicycle Lanes on Los Trancos Drive and East Peltason Drive. This allows residents to access the existing Class I Multi-Use Paths and Class II Bicycle Lanes in and around the UCI campus, such as a multi-use path from Bridge Road to Ring Road on the west-side of the UCI campus and a multi-use path from Culver Drive to Ring Road on the eastside of the campus. These multi-use paths are open to pedestrians and bicycles and include a pedestrian bridge over East Peltason Drive at Palo Verde Road. Additionally, a new pedestrian bridge over East Peltason Drive near the Project site is proposed as part of the Project. The trails to the west of the Project—Neighborhood trail, 'The Shortcut' connection to UCI Ecological Preserve, and connection south of Peltason Drive to UCI Ecological Preserve—are part of the UCI Naturescape Vision which envisions connectivity between the Project site and the main UCI campus.

UCI has a robust bicycle program that promotes bicycle transportation. In addition to bicycle infrastructure, UCI has BikeUCI Ambassadors, a Bicycle Advisory Group, and Bicycle Education and Enforcement (B.E.E.P). There are existing bike lanes on Campus Drive, East Peltason Drive, West Peltason Drive, California Avenue, Arroyo Drive, Adobe Circle South, Verano Road, Anteater Drive, Academy Way, Bridge Road and Bison Avenue that create a bicycle network to get in and around campus. The bike lanes on the streets noted above connect to the City of Irvine's bicycle network (see **Figure 1-3).** The City of Irvine's 2015 Active Transportation Plan shows that the existing bicycle facilities around the UCI campus, with the exception of Campus Drive, are low stress facilities, meaning the level of stress a bicyclist feels while using the facilities are low. The low level of stress creates a more pleasurable and appealing ride that would encourage students to ride their bike to get around campus.

In addition, UCI is a gold level "Bicycle Friendly University" and offers bicycle facilities, education and amenities such as bike registration, parking racks, bike festival, low cost bike sales, self-service bike repair stands and air pumping stations, and bike shops.

As previously discussed in Section 3.1.3, there are transit stops available for residents to use to get around the campus and to connect to OCTA transit service. The previously referenced **Figure 1-4** shows the Anteater Express shuttle services stops near the Project site.

The development of the Project would not remove any pedestrian or bicycle facilities or transit stops. Rather, the Project would enhance such facilities and will likely increase the ridership on bus routes in the

proximity of the project site due to the increase in population density that would occur due to the Project. Sidewalks will be provided which will link to those on Los Trancos Drive, providing good pedestrian access. A new Class I trail will run east-west along East Peltason Drive and north-south along Los Trancos Drive, and will connect to the existing trail through the open space directly east of the project site, which provides access to the UCI campus by a signalized crosswalk west of Engineering Service Road. A new pedestrian bridge over East Peltason Drive near the Project site is proposed by the University as part of the Project. Through these project design features; accessibility will be increased and will also create a comfortable experience for pedestrians and bicyclists.

Since the Project is enhancing the multimodal transportation network, it would have less than significant impact on VMT based on the multimodal transportation screening threshold.

3.4 DIVERSITY OF LAND USES

The Project has also been evaluated qualitatively with consideration to diversity of land uses to evaluate the Project's compatibility with the statutory goals for the VMT metric.

As discussed in Section 2.1, above, a third goal of the VMT metric is the development of "a diversity of land uses". OPR's Technical Advisory notes that new land use projects alone will not reduce VMT, however "interactions between land use projects, and also between land use and transportation projects, existing and future, together affect VMT".

The Project is part of a larger plan, specifically, UCI's LRDP. The 2007 LRDP identified general land use developments to support future campus growth. Development of the LRDP and the resulting mix of land use contained in the 2007 LRDP follow planning principles that reflect the desired character for the campus. The principles are as follows[1]:

1. Accommodate the physical resources needed to support strategic academic goals
2. Provide access while maintaining environmental quality
3. Build a cohesive academic community
4. Build and maintain quality residential neighborhoods
5. Establish centers of activity to promote campus life
6. Maintain human scale
7. Maintain planning discipline to optimize valuable land resources
8. Manage transportation needs proactively
9. Unify the campus with linkages
10. Preserve and enhance open space corridors to balance campus development
11. Develop high-quality edges with neighboring communities
12. Promote sustainable development practices

Application of such principles has created a campus with a diversity of land uses and a complimentary transportation network that has VMT reducing outcomes. This is reflected in the 2017 student survey that

[1] 2007 Long Range Development Plan, A Framework to Guide Physical Development at the University of California, Irvine, Through 2025-2026, November 2007.

indicated 79 percent of students are using sustainable transportation methods such as walking, biking, transit, carpooling, or vanpooling. Similarly, 67 percent of employees are using the sustainable commuting options as their primary method of transportation. If a future project is contained within the LRDP or is consistent with the land use patterns of the LRDP, then the project would have less than significant impact on VMT. The Project is consistent with the 2007 LRDP, meaning this Project was strategically planned to balance the Academic, Support, Research and Development, and recreational uses of the campus. Therefore, since the Project is consistent with the LRDP, and the LRDP was developed with sustainable development practices that balance land use, the environment and transportation, the Project would have less than significant impact on VMT based on the diversity of land use screening threshold.

3.5 REGIONAL TRANSPORTATION PLAN AND SUSTAINABLE COMMUNITY STRATEGIES CONSISTENCY

The Project has also been evaluated with consideration to consistency with the Regional Transportation Plan and Sustainable Community Strategies (RTP/SCS). Generally, a Project's cumulative effects are determined through consistency with the RTP/SCS. Projects that are consistent with the RTP/SCS would have less than significant cumulative impact on VMT.

Metropolitan Planning Organizations (MPOs) are required to develop an RTP/SCS. The purpose of the RTP/SCS is to evaluate regional land use patterns and transportation systems to achieve the State's target GHG emissions reduction goals. For this analysis, if the proposed Project is inconsistent with the RTP/SCS, then the inconsistency should be evaluated for a significant impact on transportation.

The UCI campus is located within the SCAG MPO region. In 2016 SCAG's Regional Council adopted the 2016-2040 RTP/SCS. An update was undertaken in 2019/2020 for the 2020-2045 RTP/SCS, also known as Connect SoCal. In May 2020, SCAG's Regional Council adopted Connect SoCal for federal transportation conformity purposes only, and the full adoption is expected to occur in September 2020, 120 days from May 7, 2020.

According to the SCAG website, for the Connect SoCal effort SCAG utilized a "Bottom-Up Local Input and Envisioning Process" where feedback is solicited from local jurisdictions on localized information such as base land use and anticipated socio-economic growth (populations, employment, household). This information is typically a component of the City's General Plan, and if available, the City's traffic analysis model.

The City of Irvine initially adopted its General Plan in December 1973 with a comprehensive update in 2000. Since then, the City has been growing and is now in the process of Phase 2 of their comprehensive General Plan Update. The City maintains ITAM TC which incorporates buildout conditions (per the City General Plan) for the City and is frequently updated as projects go through entitlements. ITAM TC houses the type of information solicited by SCAG for use in the RTP.

The latest version of the City of Irvine zoning map shows that the Project site is zoned for Institutional uses, which is defined in the City of Irvine General Plan as "a variety of publicly or privately owned and

operated facilities (hospitals, schools, religious facilities) and other nonprofit land uses." The City of Irvine and UCI have a long-standing history of cooperation in regard to campus planning, and future growth and coordination has been made between UCI's LRDP and the City's General Plan. Therefore, growth assumed in UCI's LRDP is reflected in the City's General Plan as well as ITAM TC and this type of information is supplied to SCAG during their Bottom-Up Local Input and Envisioning process. The Project is fully accounted for in the growth allocated by the 2007 LRDP. As mentioned above, coordination has been made between the land use assumptions used in the 2007 LRDP and City of Irvine.

Therefore, since the Project was accounted for in the City's growth forecast and is consistent with the current zoning map, the Project would be consistent with the latest RTP/SCS, Connect SoCal, and would have a less than significant cumulative impact on transportation based on this consistency criteria.

4.0 CONCLUSION

This study was conducted to determine if the Project would result in a significant impact to transportation. The following summarizes the results of a screening analysis as well as a quantitative analysis using VMT as the primary metric for identifying significant impacts as well as an evaluation of the Project's impact on the multimodal transportation system, diversity of land uses, and consistency with the RTP/SCS. The analysis addresses the proposed replacement of 100 existing faculty/staff multi-family units within the Las Lomas apartment complex with up to a maximum of 220 for-sale faculty/staff multi-family units. The analysis also addresses the proposed LRDP amendment to increase the total campus-wide number of faculty/staff housing from 1,700 units to a capacity of 1,830 units, an overall increase of 130 units.

Transportation Impact Analysis Summary

Screening Evaluation: A screening criteria recommended in OPR's Technical Advisory as well as the City of Irvine's transportation analysis guidelines is used to determine if the Project could be presumed to be less than significant based on size, location, proximity to transit, and affordable housing.

Two Anteater Express stops are located on East Peltason Drive less than a quarter mile from the proposed Project, providing access to the Anteater Express M Line. These stops are located at South Circle View Drive and the Engineering Service Road approximately 1,200 feet and 1,100 feet from the Project site, respectively. Headways for the M Line are 6 to 10 minutes during the day and 25 minutes after 7:00 PM. Therefore, the Anteater Express M line would be considered a high-quality transit corridor since service intervals are no longer than 15 minutes during peak on-campus commute hours and two M line bus stops are located less than a quarter mile from the Project site.

OPR's Technical Advisory states that a project can be presumed to have a less than significant impact on VMT if the project is within a half-mile of an existing stop along a "high-quality transit corridor". A high-quality transit corridor is defined as an existing corridor with fixed route bus service with service intervals no longer than 15 minutes during peak commute hours. Since the Project is located along a high-quality transit corridor, the Project is presumed to have a less-than-significant impact on transportation.

VMT Analysis: While the Project has a less than significant impact on transportation based on the transit proximity screening criteria, the Project site is not in an area recognized by the City of Irvine as a Transit Priority Area that satisfies the City's transit screening criteria. Therefore, for information purposes only, a detailed VMT analysis has been prepared to show the Project's effect on regional VMT. Consistent with OPR's Technical Advisory, the City of Irvine's analysis methodology and travel demand forecasting model (i.e., ITAM TC) were used for this analysis. Per the City of Irvine Guidelines, ITAM TC was used to estimate the net change in VMT and net change in population to calculate what is referred to as the "Project change VMT rate" measured on a per capita basis (VMT per population).

When considering the construction of 220 multifamily units of faculty and staff housing, the Project change VMT rate is calculated as 11.4 VMT per capita (per population). The average baseline for population is 17.5 VMT per capita (per population) and the threshold of significance is 14.9 VMT per

capita (per population). The Project change VMT rate is lower than the average baseline and the threshold of significance. Therefore, the Project would not result in a significant impact, as summarized in the previously referenced **Table 3-3** above.

The proposed amendment to the LRDP also results in a less than significant impact as shown in the previously referenced **Table 3-4**, above. The net change of residential VMT is 3,609 with the LRDP amendment. ITAM TC also estimates that the Project would result in a net increase in population of 354. The amount of VMT per capita reduces with the LRDP amendment; therefore, the proposed LRDP amendment would not result in a significant impact.

ITAM TC estimates also show that employment VMT is reduced with the addition of the Project. Employment VMT reduces overall due to the Project since the location of the Project facilitates commute trips by walking and biking for Project residents who are UCI employees. Without the Project, these employees would have to live further from campus, and would be more likely to commute by automobile, thereby increasing VMT.

Multimodal Transportation Analysis – The Project would not remove any pedestrian or bicycle facilities, or transit stops. Rather, the Project would enhance such facilities through the site development design features such as sidewalks and pedestrian pathways to facilitate walking. The Project would also provide connections to future trails and bicycle infrastructure being implemented by the University. Since the Project is enhancing the multimodal transportation network, it would have less than significant impact.

Land Use Analysis – The proposed Project would add diversity to the surrounding area by adding more residential uses near employment within a walkable distance. The Project is also consistent with the LRDP that was developed with sustainable development practices that balance land use, the environment and transportation. Therefore, the Project would have a less than significant impact.

RTP/SCS Consistency – The Project's cumulative effects are determined through consistency with the RTP/SCS. The Project is accounted for in the growth allocated by UCI's 2007 LRDP. Through SCAG's Bottom-Up Local Input and Envisioning Process, there has been coordination between the City of Irvine and SCAG regarding land use assumptions used in the 2007 LRDP and the City of Irvine General Plan. In addition, the latest version of the City of Irvine zoning map shows that the project site is zoned for Institutional uses, which the City of Irvine General Plan defines as "a variety of publicly or privately owned and operated facilities (hospitals, schools, religious facilities) and other nonprofit land uses". Therefore, since the 2007 LRDP was accounted for in the City's growth forecast, and the Project is consistent with the City of Irvine's General Plan zoning map, the Project would be consistent with both the adopted 2016 RTP/SCS and draft Connect SoCal and the Project would have a less than significant impact based on this consistency criteria.

In summary, the Project's impact on transportation is shown to be less than significant.

5.0 REFERENCES

1. University of California Irvine Long Range Development Plan 2007 Update Traffic Study, Austin-Foust Associates, Inc., May 2007.

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6. Technical Advisory on Evaluating Transportation Impacts on CEQA, California's Office of Planning and Research, December 2018.

7. OP 16: Student Commute Modal Split, University of California, Irvine, The Sustainability Tracking, Assessment and Rating System, https://reports.aashe.org/institutions/university-of-california-irvine-ca/report/2018-03-28/OP/transportation/OP-16/ , last accessed August 2021.

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9. City of Irvine's 2015 Active Transportation Plan, City of Irvine, April 2015.

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15. CEQA VMT Impact Analysis Guidelines, City of Irvine, April 2020

16. SB 743 Implementation VMT Technical Appendix Version 1.4, City of Irvine, May 2020.

17. Sustainable Transportation Policy Goals, University of California Office of the President, https://www.ucop.edu/sustainability/policy-areas/sustainable-transportation/index.html

APPENDIX A TRIP RATE AND TRIP GENERATION CALCULATION SHEET

Table A-1 Trip Rates and Trip Generation Derivation – 220 Multi-Family Dwelling Units

ADT Trip Rate for Faculty and Staff Housing					
Land Use	**Unit**	**Rate 1**	**Rate 2**	**Rate 1 Description**	**Rate 2 Description**
Faculty and Staff Housing 3-bedroom units	Bed	8.4	0.6	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)
Faculty and Staff Housing 2-bedroom units	Bed	7.0	0.5	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)
Source: UCI Main Campus Traffic Model					

Peak Hour Trip Rates (Percent of ADT)				
	AM Peak Hour		**PM Peak Hour**	
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**
Residence	0.5%	5.3%	4.6%	2.8%
Note: The trip distribution derived is for average weekday vehicle trips.				

Project ADT Trip Generation				
Land Use	**Amount**	**Unit**	**Rate 1 Vehicle Trips (Off-Campus)**	**Rate 2 Vehicle Trips (On-Campus)**
Faculty/Staff Housing 3-bdrm	220	DU	1,848	132
Faculty/Staff Housing 2-bdrm	0	DU	0	0
Total	220	Du	1,848	132

Project Peak Hour Trip Generation				
	AM Peak Hour		**PM Peak Hour**	
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**
Off-Campus				
Residence	9	98	85	52
On-Campus				
Residence	1	7	6	4
Total	**10**	**105**	**91**	**55**

Table A-2 Trip Rates and Trip Generation Derivation – Existing Las Lomas Apartment Complex

ADT Trip Rate for Faculty and Staff Housing					
Land Use	**Unit**	**Rate 1**	**Rate 2**	**Rate 1 Description**	**Rate 2 Description**
Faculty and Staff Housing 3-bedroom units	Bed	8.4	0.6	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)
Faculty and Staff Housing 2-bedroom units	Bed	7.0	0.5	Non-academic vehicle trips (Off-Campus)	Internal academic vehicle trips (On-Campus)
Source: UCI Main Campus Traffic Model					

Peak Hour Trip Rates (Percent of ADT)				
	AM Peak Hour		**PM Peak Hour**	
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**
Residence	0.5%	5.3%	4.6%	2.8%
Note: The trip distribution derived is for average weekday vehicle trips.				

Project ADT Trip Generation				
Land Use	**Amount**	**Unit**	**Rate 1 Vehicle Trips (Off-Campus)**	**Rate 2 Vehicle Trips (On-Campus)**
Faculty/Staff Housing 3-bdrm	22	DU	185	13
Faculty/Staff Housing 2-bdrm	78	DU	546	39
Total	100	Du	731	52

Project Peak Hour Trip Generation				
	AM Peak Hour		**PM Peak Hour**	
Description	**Inbound**	**Outbound**	**Inbound**	**Outbound**
Off-Campus				
Residence	4	39	34	20
On-Campus				
Residence	1	3	3	1
Total	**4**	**42**	**37**	**21**

APPENDIX B ITAM TC PROJECT VMT SUMMARY REPORT

ITAM PROJECT VMT SUMMARY REPORT

V 1.2-062321

PROJECT INFORMATION	
Project #:	Los Trancos
Name:	University Hills - Area 12 Housing Project
Description:	Existing (062321) Plus Project
Type:	Residential

			Baseline	Project
Vehicle Miles Travelled (VMT)	ORANGE COUNTY	Total	139,404,847	139,409,181
		Population	56,338,915	56,345,727
		Employment	83,065,931	83,063,454
Population and Employment		Population	3,218,615	3,219,213
		Employment	1,707,045	1,707,045
Δ VMT (With Project - No Project)		Total		4,334
		Population		6,811
		Employment		(2,477)
Δ Population & Employment Caused by Project		Population		598
		Employment		-
VMT Rate Threshold Goal[1]		Residential	14.88	
		Non-Residential	41.36	
Project Δ VMT Rate[1]		Residential		11.39
		Non-Residential		
		Applicable Measure(s)		No Impact
		Threshold Goal		14.88
		Net VMT Rate Percentage Increase[2]		
		Mitigation required?		No

MITIGATION MEASURES	
On-Site	☐ 2.5%
Off-Site	☐ 5.0%
Additional Mitigation[3]	☐
Significant VMT Impact?	**NO**

Notes:

1- Both Residential and Non-Residential VMT Rates are calculated based on the County VMT and SED.

2- For Mixed-Use projects, the "Net VMT Rate Percentage Increase" is based on the higher of Residential or Non-Residential VMT rate.

3- Sufficient justification must be provided to support additional mitigation.