UCI

DRAFT

TIERED INITIAL STUDY &

MITIGATED NEGATIVE DECLARATION

Falling Leaves Foundation Medical Innovation Building

January 2022

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1.0 PROJECT INFORMATION

1.1 Project Title

Falling Leaves Foundation Medical Innovation Building

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 at UCI's Health Sciences Quad in the West Campus north of the Michael Drake Drive and Health Sciences Road intersection.

1.5 Custodian of the Administrative Record

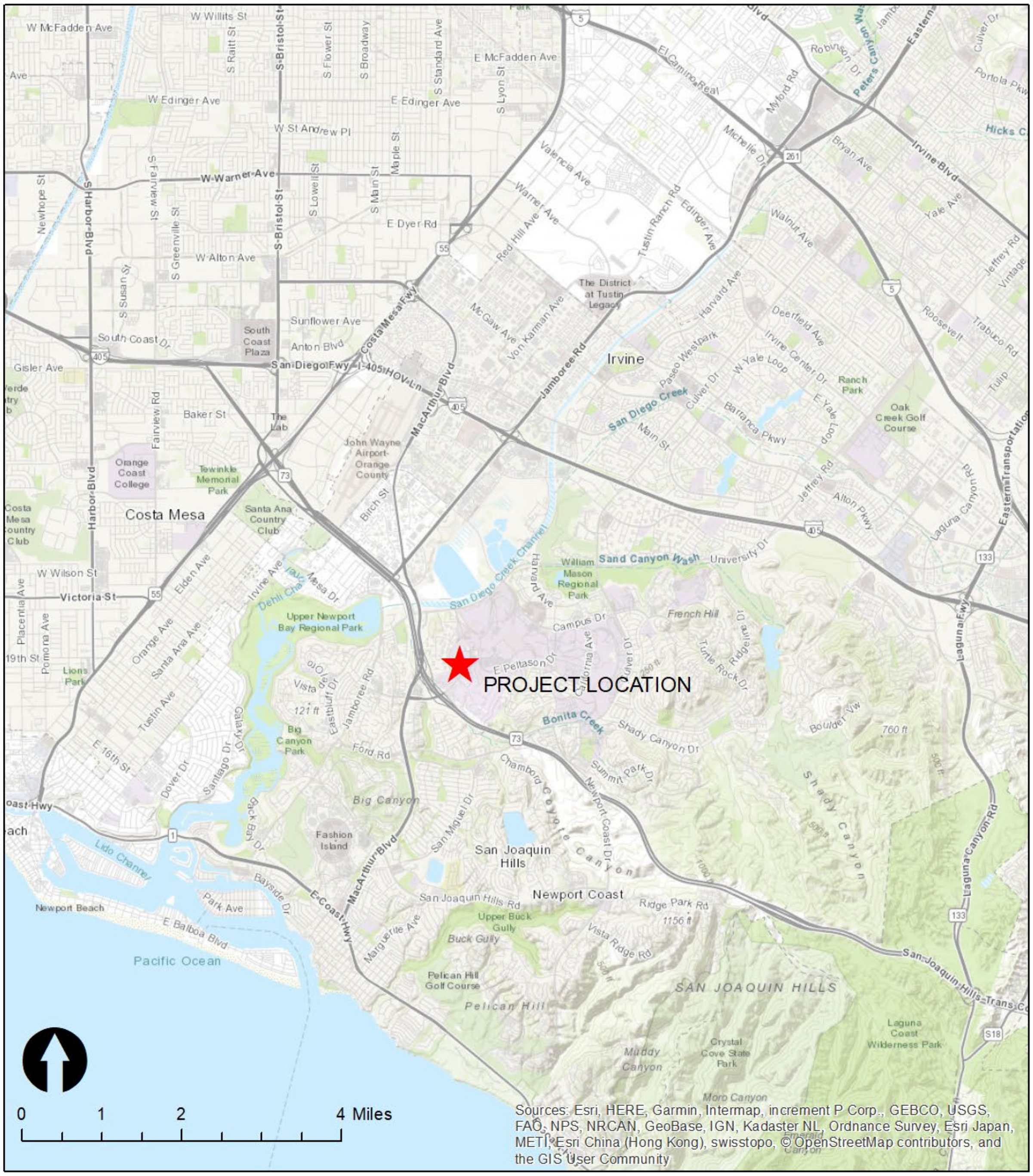
University of California, Irvine
Office of Campus Physical and Environmental Planning
4199 Campus Drive, Suite 380, Irvine, CA 92697-2325

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 proposed 2.8-acre project site is located in the Health Sciences Quad of the West Campus. Surrounding uses include Gross Hall, Hewitt Hall, Health Sciences Road, and surface parking Lot 81 and Lot 84 to the north; surface parking Lot 70 and undeveloped land to the south across Michael Drake Drive; a portion of Lot 82, ornamental landscaping, and West Peltason Drive to the east; Campus Village to the northeast across West Peltason Drive; a portion of surface parking Lot 83, surface parking Lot HT, and the Health Sciences Parking Structure project (currently under construction) to the west; and the Gavin Herbert Eye Institute and the Susan and Henry Samueli College of Health Sciences & Sue and Bill Gross Nursing and Health Sciences Hall (currently under construction) to the southwest. Existing on-site uses include portions of surface parking Lot 82 and Lot 83, a segment of Health Sciences Road, and ornamental landscaping (see Exhibits 2-1 and 2-2).

2.2 Description of Project

The proposed project would demolish portions of the existing surface parking Lots 82 and 83 and a segment of Heath Sciences Road that bisects the project site and would construct an approximately 250,000-gross-square-foot (GSF) facility within the UCI West Campus to support collaborative, interdisciplinary, and innovative research in medicine and other health sciences disciplines. Proposed uses to be constructed within the new facility include academic, laboratory, research, administrative, and support space (see Exhibit 2-3).

The structure would be approximately five-to-six stories above grade with a basement level for a total of six-to-seven stories. The structure would be designed and constructed primarily of concrete, brick, or stone masonry consistent with the architectural design guidelines in the UCI Physical Design Framework and surrounding existing buildings and buildings currently under construction in the Health Sciences Quad (see Exhibit 2-4).

As shown in Table 2-1, the structure would include approximately 250,000 GSF of laboratory, research, academic, administrative, and support space.

Table 2-1
Proposed Building Square Footage

Space Type	GSF
Research Laboratory and Support Space	150,000
Animal Research Facility	28,333
Scholarly Activity/Collaboration Space	13,333
Academic & Administrative Offices and Support	50,000
Public Space and Building Support	8,334
Total - Medical Innovation Building	**250,000**

Research laboratory and support space would include open, shared laboratories for principal investigators and their teams, and would accommodate a range of science disciplines. Laboratory support spaces would be configured to allow sharing and ease of reassignment, and would include imaging facilities, microscopy, cryostorage, autoclave, glasswash, controlled temperature rooms, and chemical storage.

The animal research facility would primarily support the research of the principal investigators housed in the building.

Scholarly activity/collaboration space includes conference rooms, small meeting spaces (or "huddle" rooms), open collaboration areas, and seminar rooms. Academic and administrative office and support space includes faculty offices, write-up workstations for post-doctoral researchers and other research team members, administrative space, and copy/workrooms. Public space and building support would include kitchenettes and wellness rooms for each floor, main lobby, and loading dock/building support functions such as building manager's office, trash and recycling compactors, storage, and custodial space.

An existing segment of Health Sciences Road currently bisects the project site. As part of the proposed project, the roadway segment would be demolished and realigned around the eastern boundary of the project site. Other site improvements would include an arrival court, terraces, native garden, patient drop-off area, 24-hour lighting, and ornamental landscaping. Appropriate acoustical and visual buffers, as determined during the final design stages, would be utilized during project construction to minimize potential project related aesthetic and/or noise impacts to existing sensitive receptors in the project vicinity.

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

Exhibit 2-1
Project Location and Adjacent Land Uses

Exhibit 2-2
Existing Project Views

View 1: Southern boundary of the project site on existing Health Sciences Road looking east toward West Peltason Drive.

View 2: Southern boundary of the project site on existing Health Sciences Road look northeast toward Lot 82.

View 3: Southern boundary of the project site looking west toward Gavin Herbert Eye Institute and the College of Health Sciences and Nursing Building currently under construction.

View 4: Northeastern boundary of the project site looking north toward Gross Hall.

View 5: Western boundary of the project site looking north toward Gross Hall and Hewitt Hall

View 6: Western boundary of the project site looking southwest toward Lot 83.

Exhibit 2-3
Conceptual Site Plan

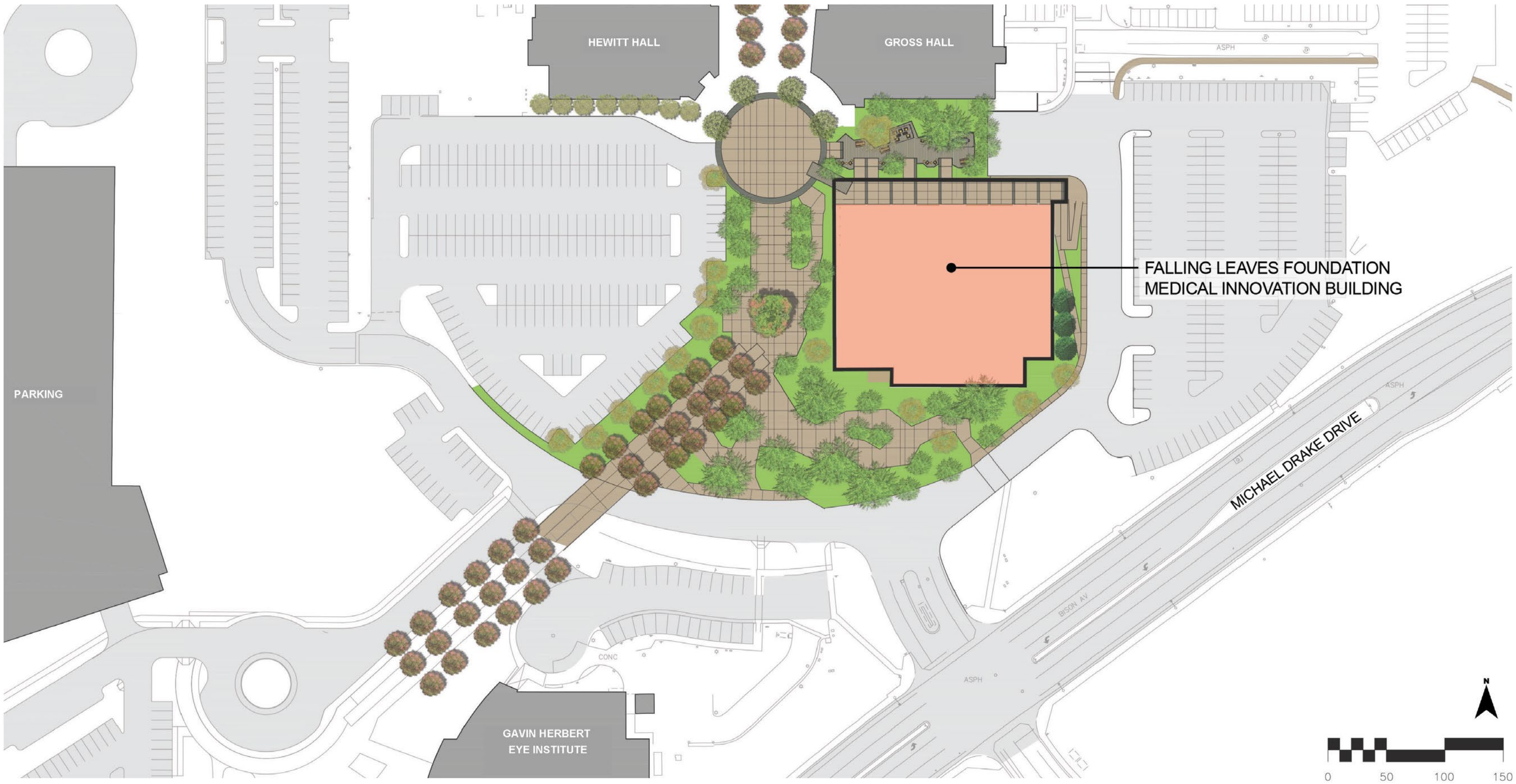


Exhibit 2-4
Conceptual Perspectives

2.2.1 Project Phasing and Site Development

Project construction is anticipated to begin in October 2022 and would occur over 30 months with anticipated completion in March 2025 and occupancy in summer 2025. Demolition and grading would occur during the first three months, and construction over the following 27 months.

Grading for the proposed improvements would require cut and fill to create the building pads. The proposed project is anticipated to have approximately 15,500 cubic yards (CY) of cut and 1,500 CY of fill, requiring approximately 14,000 CY of exported soil.

2.2.2 Access

Construction staging is proposed to occur adjacent to the project site within the existing staging areas currently in use for the College of Health Sciences and Nursing Building and Health Sciences Parking Structure projects currently under construction to the west and southwest of the proposed project. Haul routes during construction would be along Bison Avenue, California Avenue, and West Peltason Drive, with site access located at the intersection of Michael Drake Drive and Health Sciences Road.

As part of the proposed project, the existing Health Sciences Road would be realigned to the east of the project site to accommodate the project footprint. The primary vehicle access to the project site would occur via the intersection of Michael Drake Drive and Health Sciences Road. Additional vehicle access to the project site would occur via the existing West Peltason Drive and Health Sciences Road intersection to the east of the project site and the California Avenue and Theory intersection, currently under construction, and the California Avenue and College of Health Sciences intersection, currently under design, to the west of the project site. The Health Sciences Parking Structure currently under construction west of the project site would provide parking to the Health Sciences Quad, including the proposed project, and would serve faculty, staff, students, and visitors. Additional parking would be available in the existing surface lots adjacent to the project site. New pedestrian access would be constructed as part of the proposed project, such as the pedestrian connection from Gavin Herbert Eye Institute to the proposed arrival loop, which would increase connectivity to the existing Health Sciences Quad uses north of the project site and to the existing and under construction uses to the west and southwest of the project site.

2.2.3 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 10-inch line located in Health Sciences Road, recycled water through an existing 6-inch that currently exists within Health Sciences Road but would be rerouted around the proposed structure, sanitary sewer water through an existing eight-inch line northeast of the project site, and fire water through the existing 10-inch water line. To provide on-site electricity, the buildings would connect to an existing 12-kilovolt (kV) line that currently exists within Health Sciences Road but would be rerouted around the proposed structure, which connects to UCI's electrical substation. Per the University of California Sustainable Practices Policy, the proposed project would not utilize natural gas. If any existing connections conflict with the project design, alternative and/or temporary utilities would be provided to all adjacent structures during relocation.

The project site is proposed to drain from north to south. As part of the project, the existing 12-inch storm drain located within Health Sciences Road would be rerouted and upgraded to 18 inches. Storm drainage would be collected and treated on site through best management practices (BMPs). Low impact development (LID) features, such as the proposed bioretention features located southwest of the structure, would be implemented to retain stormwater flows from the project site before released then conveyed to a proposed eight-inch storm drain located southwest of the proposed structure. All utility locations would be finalized during the design phase.

2.2.4 Population

In order to operate the facility, it is anticipated approximately 375 new full-time faculty and staff would be hired, less than 0.1 percent of the existing on-campus population. The academic and laboratory space would be utilized by the existing student population and 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 on the UCI campus. The estimate of approximately 375 new faculty and staff would result in a faculty and staff population of approximately 9,206, which is within the 11,443 faculty and staff capacity analyzed in the 2007 LRDP EIR.

2.3 Consistency with the LRDP

The applicable land use plan is the 2007 LRDP and the University is the only agency with land use jurisdiction over projects located on the campus. The project site is designated as Academic and Support in the LRDP, which allows for office, research, conference, and clinical uses; multipurpose facilities; and auditoriums. Furthermore, the approximately 250,000 GSF proposed for the structure is within the space program identified for the West Campus in the LRDP and analyzed in the LRDP EIR. Therefore, the project is consistent with the 2007 LRDP.

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. The Board of Regents of the University of California (The Regents) will consider design and CEQA approval of the proposed project in March 2022.

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

1/25/2022

Date

Richard Demerjian

Printed Name

For

4.0 EVALUATION OF ENVIRONMENTAL IMPACTS

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

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

4.1 Aesthetics

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

Discussion

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

a) Scenic Vista: No Impact

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

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

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 two miles southwest of the project site and is not visible from the campus. Therefore, the proposed project would not affect scenic resources within a state highway and no impact would occur. No mitigation is required.

c) Visual Character: Less than Significant Impact

The proposed structure would consist of approximately five-to-six stories above grade and one basement level, totaling six-to-seven stories, constructed primarily of concrete, brick, or stone masonry consistent with the architectural guidelines in the UCI Physical Design Framework. Areas adjacent to the project site include academic and research buildings constructed with similar materials, such as Hewitt Hall and Gross Hall to the north, and medical office, such as the the Gavin Herbert Eye Institute to the southwest of the project site. Additionally, the proposed project would construct an arrival court and pedestrian pathways to connect to Hewitt Hall, Gross Hall, and the project site to Gavin Herbert Eye Institute to the southwest. No applicable regulations govern scenic quality of the viewshed surrounding the project area. Therefore, the proposed project would retain the visual character of the campus and surrounding uses and impacts would be less than significant. No mitigation is required.

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 areas adjacent to the project site have been previously developed, ambient lighting levels may increase with the installation of 24-hour lighting. However, the project site is located within a developed area of the West Campus where the increase in ambient lighting levels would be minimal. 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: No Impact

As part of its enforcement responsibilities, the Environmental Protection Agency (EPA) requires each state with nonattainment areas to prepare and submit a State Implementation Plan (SIP) that demonstrates the means to attain the federal standards. The SIP must integrate federal, State, and local plan components and regulations to identify specific measures to reduce pollution in nonattainment areas, using a combination of performance standards and market-based programs. Similarly, under state law, the California Clean Air Act (CCAA) requires an air quality attainment plan to be prepared for areas designated as nonattainment regarding the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). 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 the South Coast Air Quality Management District (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 the NAAQS and CAAQS. The 2016 AQMP is a regional and multi-agency effort including the SCAQMD, the California Air Resources Board (CARB), the 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 2020 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), updated emission inventory methodologies for various source categories, and SCAG's latest growth forecasts. SCAG's latest growth forecasts were defined in consultation with local governments and with reference to local general plans. The 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 California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (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 LRDP and Strategic Plan. The project site as designated as Academic and Support in the UCI LRDP. The proposed project is consistent with the primary uses allowed under Academic and Support land use category, which include classrooms, instructional and research laboratories, and other campus facilities. Compatible uses include food service, recreation, parking, utility infrastructure, and other 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. Therefore, the project is also consistent with the second criterion.

In addition, the project would not cause the SCAQMD's population or job growth projections used to develop the AQMP to be exceeded. The project also supports SCAG RTP/SCS and SCAQMD policies promoting infill development to reduce emissions. Therefore, the proposed project would not conflict with an air quality plan and no impact would occur. 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 29 months. The project would demolish the existing parking lot and is anticipated to require approximately 15,500 cubic yards (CY) of excavation with 14,000 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 project's predicted maximum daily construction-related emissions are summarized in Table 4.2-1. As shown in Table 4.2-1, all criteria pollutant emissions would remain below their respective thresholds.

Table 4.2-1
Construction-Related Emissions

Construction Year	Maximum Pounds Per Day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
2022	3.24	33.13	21.11	0.04	10.21	5.85
2023	2.72	27.57	20.46	0.05	9.86	5.54
2024	37.35	16.94	22.60	0.05	2.40	1.12
2025	38.17	24.46	37.23	0.07	2.88	1.46
SCAQMD Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed SCAQMD Threshold?	No	No	No	No	No	No

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

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 stockpiles 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. Operational emissions attributable to the proposed project are summarized in Table 4.2-9. The operational emissions sources are described in more detail below.

Area Source Emissions. Area Source Emissions would be generated due to consumer products (e.g., fertilizers/pesticides, detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints, etc.), architectural coatings, and gasoline-powered landscaping equipment that were previously not present on the site.

Energy Source Emissions. Energy source emissions would be generated due to the project's electricity usage. The project's primary use of electricity would be for space heating and cooling, water heating, ventilation, lighting, appliances, and electronics.

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 551 average daily trips (ADT).

Table 4.2-2 shows that the project's unmitigated operational emissions would not exceed SCAQMD thresholds for any criteria air 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 emissions would result in a less than significant long-term regional air quality impact.

Table 4.2-2
Long-Term Operational Emissions

Source	Maximum Pounds Per Day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer Emissions						
Area Source Emissions	5.60	<0.01	0.03	0	<0.01	<0.01
Energy Emissions	0.15	1.39	1.17	<0.01	0.11	0.11
Mobile Emissions	1.56	1.62	15.67	0.04	3.96	1.07
Total Emissions	7.32	3.02	16.87	0.04	4.06	1.18
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	No	No	No	No	No	No
Winter Emissions						
Area Source Emissions	5.60	<0.01	0.03	0	<0.01	<0.01
Energy Emissions	0.15	1.39	1.17	<0.1	0.11	0.11
Mobile Emissions	1.52	1.74	15.24	0.03	3.96	1.07
Total Emissions	7.28	3.14	16.44	0.04	4.06	1.18
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	No	No	No	No	No	No
ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less						
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.						

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 4.2-2, the project's operational emissions would not exceed SCAQMD thresholds. Therefore, 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.

Therefore, in compliance SCAQMD Rules 402 (Nuisance), 403 (Fugitive Dust), and 1113 (Architectural Coatings), the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment and impacts would be less than significant. No mitigation is required.

c) Sensitive Receptors: Less Than Significant Impact

The nearest sensitive receptors to the project site are UCI buildings and classrooms directly north and northwest of the construction area. There are also multifamily residences approximately 572 feet northeast. To identify impacts to sensitive receptors, the SCAQMD recommends addressing localized significance thresholds (LSTs) for construction. LSTs were developed in response to SCAQMD Governing Boards' Environmental Justice Enhancement Initiative (I-4). The SCAQMD provided the Final Localized Significance Threshold Methodology (dated June 2003 [revised 2008]) for guidance. The LST methodology assists lead agencies in analyzing localized impacts from project-specific emissions.

Since CalEEMod calculates construction emissions based on the number of equipment hours and the maximum daily soil disturbance activity possible for each piece of equipment, Table 4.2-3, is used to determine the maximum daily disturbed acreage for comparison to LSTs. The appropriate SRA for the localized significance thresholds is the Central Orange County Coastal area (SRA 20) since this area includes the project site. LSTs apply to CO, NO_2, PM_{10}, and $PM_{2.5}$.

The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5 acres. Project construction is anticipated to disturb a maximum of 2.5 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	1	0.5	8	0.5
	Scrapers	0	1.0	8	0
	Tractors/Loaders/Backhoes	3	0.5	8	1.5
Total Acres Graded per Day					**2.5**
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 UCI buildings and classrooms directly north and northwest of the construction areas as well as the multifamily residences located approximately 572 feet (172 meters) northeast. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters (the SCAQMD recommends the 25-meter LSTs to be used for receptors located closer than 25 meters). Although the closest sensitive receptors are located 172 meters away, the 25-meter thresholds were used to provide a conservative analysis. 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 project would result in a less than significant impact concerning LSTs during construction activities.

Localized Operational Significance Analysis

LSTs for receptors located at 25 meters for SRA 20 were utilized in this analysis. As the building footprint is less than one acre, the 1-acre LST thresholds were used. The on-site operational emissions are compared to the LST thresholds in Table 4.2-5. Table 4.2-5 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.

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).

Table 4.2-4
Localized Significance of Construction Emissions

Construction Activity	Maximum Pounds Per Day			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Demolition (2022)	25.72	20.59	2.64	1.37
Site Preparation (2022)	33.08	19.70	10.02	5.80
Site Preparation (2023)	27.53	18.24	9.67	5.48
Grading (2023)	17.94	14.75	3.80	2.18
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 (2024)	1.22	1.81	0.06	0.06
Architectural Coating (2025)	1.15	1.81	0.05	0.05
SCAQMD Localized Screening Threshold (adjusted for 2.5 acres at 25 meters)	*142*	*1,087*	*8*	*6*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less				
Source: CalEEMod version 2020.4.0. Refer to **Appendix A** for model outputs.				

Table 4.2-5
Localized Significance of Operational Emissions

Activity	Maximum Pounds Per Day			
	NO_X	CO	PM_{10}	$PM_{2.5}$
On-Site (Area and Energy Sources)	1.40	1.20	0.12	0.11
SCAQMD Localized Screening Threshold (1 acre at 25 meters)	*92*	*647*	*1*	*1*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less				
Source: CalEEMod version 2020.4.0. Refer to **Appendix** A for model outputs.				

As previously discussed, project emissions would be less than significant and would not exceed SCAQMD thresholds (refer to Table 4.2-1 and Table 4.2-2). Localized effects of on-site project emissions on nearby receptors were also found to be less than significant (refer to Table 4.2-4 and Table 4.2-5). 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 carbon monoxide (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 551 ADT attributable to the project. Therefore, impacts would be less than significant.

Construction-Related Diesel Particulate Matter

Project construction would generate diesel particulate matter (DPM) emissions from the use of off-road diesel equipment required 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 toxic air contaminant [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 adjacent to the project site and are 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.

Operational Toxic Air Contaminants

The proposed project would include laboratory space that would involve the use of chemicals and may include Toxic Air Contaminants (TACs). Laboratory operations that use TACs would be performed in fume hoods to protect people in the laboratory from exposure to hazardous vapors. TAC emissions are first diluted in the fume hood, then the fume hood exhaust is emitted and disperses into the atmosphere. The dilution and dispersion from the fume hoods reduce pollutant concentrations and exposure. Adverse effects associated with pollutant exposure also decrease with distance.

Sensitive receptors located near the proposed project include residents located approximately 572 feet northeast of the project site. Hewitt Research Hall and Gross Hall are located approximately 50 feet north of the project site; however, these buildings do not have outdoor areas of frequent human use where sensitive receptors could be exposed to TACs through inhalation for extended periods of time.

A quantitative Health Risk Assessment (HRA) was prepared as part of the 2007 LRDP EIR. The HRA estimated TAC emissions from laboratory operations, fuel combustion, and vehicular emissions based on existing emissions inventories and projected campus-wide growth. Air dispersion modeling and risk characterization was conducted to calculate both average and high-end risks for each receptor based on the predicted downwind concentration of TACs, the toxicity of each TAC, and the exposure scenario (residential, occupational, schoolchildren, etc.). Incremental cancer risks (i.e., cancer risks above background levels) and non-cancer hazards were calculated for over 2,600 receptors in the UCI campus vicinity.

Two types of health effects were evaluated in the HRA: cancer risk, which represents the potential for increased risk of cancer in a lifetime associated with exposure to emissions from the implementation of the UCI LRDP, and non-cancer hazards (both chronic and acute) which represent the potential for a non-cancer health effect due to exposure on either a chronic or short-term basis to emissions from the LRDP.

The HRA found incremental cancer risks to be below the SCAQMD significance level of 10 in one million for all receptors and all exposure scenarios. The population cancer burden, based on diesel particulate (the risk driving TAC) was calculated to be 0.0003612, which is well below the SCAQMD's acceptable cancer burden of 0.5. The emissions associated with implementation of the UCI LRDP was therefore found not to pose a significant incremental cancer risk to the surrounding populations. Additionally, the LRDP EIR analysis determined that chronic non-cancer hazards and acute hazards would be below the significance threshold of 1.0 for all receptors. The emissions associated with implementation of the UCI LRDP would therefore not pose a chronic or acute hazard to the surrounding populations.

The HRA within the LRDP EIR analyzed a 140 percent increase in building square footage (the analysis used a baseline of 3,103,000 gross square feet of existing engineering and science building space) at UCI and assumed a comparable increase in percentage of chemical uses would occur. The HRA analyzed a total of 7,440,000 gross square feet of engineering and science buildings for the LRDP. The proposed project is within the building square footage assumed in the HRA and would not result in additional impacts beyond what was originally identified in the LRDP EIR.

The HRA included a refined dispersion modeling assessment to estimate project-related pollutant concentrations from on-campus sources. Air dispersion modeling is dependent on the emissions of TACs, the location of sources, and the site-specific meteorology of the impacted area. The dispersion modeling calculated one-hour and annual downwind concentrations to provide an estimate of the amount of TACs to which receptors would be exposed due to operations on the UCI campus. Evaluated land uses in the surrounding area include residential and commercial areas in the immediate vicinity of UCI, student housing on campus, and faculty housing on campus. A receptor grid was set up in the on-campus housing areas to address on-site impacts. In addition, a 100-meter grid was set up to evaluate off-site risks. As noted above, incremental cancer risks (i.e., cancer risks above background levels) and non-cancer hazards were calculated for over 2,600 receptors in the UCI campus vicinity.

The HRA identified the point of maximum impact, the maximally impacted residential receptor, and the maximally impacted occupational receptor. Separate exposure scenarios were evaluated for both on- and off-site residential, occupational, student, and child receptors. The HRA determined that emissions associated with implementation of the UCI LRDP would not pose a significant incremental cancer risk to the surrounding populations. Chronic and acute non-cancer hazards were also found to be less than significant.

The HRA was designed to present an upper-bound calculation of risks to individual receptors on and in the vicinity of the UCI campus. Uncertainties in the emission estimates, dispersion modeling, exposure assessment, and toxicity assessment are designed to provide health-protective estimates of human health risks. Actual risks are likely to be lower than the upper-bound risks presented in the HRA. The findings of the HRA uncertainty evaluation add confidence to the conclusions that the potential incremental cancer risks as well as chronic and acute non-cancer hazards will not exceed significance thresholds.

It should be noted that since completion of the HRA, the California Office of Environmental Health Hazard Assessment (OEHHA) has updated their guidance for health risk assessments to include age sensitivity factors, updated breathing rates, a factor for the fraction of time spent at home, and reduced exposure periods. Methods used in the HRA are conservative in that the methodology is more likely to overestimate than underestimate potential human health impacts. For example, exposed individuals are assumed to live or work at locations where TAC concentrations are predicted to be highest and are also assumed to be present at these locations for 24 hours per day, 7 days per week, for 70 years (residential exposure), and for 8 hours per day, 5 days per week, for 46 years (occupational exposure). Employing these assumptions results in conservative estimates of the amount of TACs these individuals might inhale, and in conservative estimates of the potential individual health risks. The OEHHA updated breathing rates would represent an increase in risk values. However, the fraction of time at home factor and the reduced exposure period would represent a decrease in the risk values. As such, the updated OEHHA guidance does not invalidate the conservative values in the HRA. Therefore, the impacts due to exposure of sensitive receptors to substantial pollutant concentrations would be less than significant. 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, because the proposed project would not include uses that have been identified as odor sources, impacts due to project emission odors 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 Memo was prepared by Michael Baker International and is included as Appendix B of this IS/MND.

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

Although a 500-foot buffer was evaluated around the project site for the survey area, the project footprint is located in a developed parking lot and all impacts would be entirely restricted to areas that are already developed, well away from any natural vegetation communities or native habitats. Therefore, although the records search results included in Appendix B incorporated the survey buffer and surrounding USGS quadrangles within a 5-mile radius to determine what special-status species are known to occur in the project vicinity for reference purposes, the following analysis only considers the potential for special-status species to occur within or in areas immediately adjacent to the project site due to the highly developed existing project site and general lack of potential to impact areas outside of the project footprint.

The CNDDB (CDFW 2021a), CIRP (CNPS 2021), and IPaC (USFWS 2021a) were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities in the USGS Tustin, Laguna Beach, and Newport Beach, California 7.5-minute quadrangles. The field survey was conducted to assess the conditions of the habitat(s) within the boundaries of the project site and survey area to determine if the existing vegetation communities, at the time of the field survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species. Additionally, the potentials for special-status species to occur within the project site were determined based on the reported occurrence locations in the CNDDB and CIRP and the following criteria:

Present: the species was observed or detected within the survey area during the field survey.

High: Occurrence records (within 20 years) indicate that the species has been known to occur on or within 1 mile of the survey area and the site is within the normal expected range of this species. Intact, suitable habitat preferred by this species occurs within the survey area and/or there is viable landscape connectivity to a local known extant population(s) or sighting(s).

Moderate: Occurrence records (within 20 years) indicate that the species has been known to occur within 1 mile of the survey area and the survey area is within the normal expected range of this species. There is suitable habitat within the survey area, but the site is ecologically isolated from any local known extant populations or sightings.

Low: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the survey area, but the site is outside of the normal expected range of the species and/or there is poor quality or marginal habitat within the survey area.

Not Expected: There are no occurrence records of the species occurring within 5 miles of the survey area, there is no suitable habitat within the survey area, and/or the survey area is outside of the normal expected range for the species.

The CNDDB, CIRP, and IPaC databases identified forty-nine (49) special-status plant species and forty-seven (47) special-status wildlife species as occurring within the USGS Tustin, Laguna Beach, and Newport Beach, California 7.5-minute quadrangles. In addition, seven (7) special-status vegetation communities were identified. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on specific habitat requirements, availability/quality of suitable habitat, and known distributions of species/populations.

Special-Status Plants

A total of forty-nine (49) special-status plant species have been recorded in the USGS Tustin, Laguna Beach, and Newport Beach, California 7.5-minute quadrangles by the CNDDB, CIRP, and IPaC databases (refer to Attachment D). No special-status plant species were identified within the survey area during the November 2021 field survey. Nearly all of the vegetation within the survey area is ornamental, intentionally planted as part of university landscaping. The only naturally-occurring vegetation of note within the entire survey area is in its southeastern portion, immediately north of Michael Drake Drive along the drainage feature and in the UCI Ecological Preserve located to the south of Michael Drake Drive. While special-status plant species may occur in the UCI Ecological Preserve, none were found in the small section of the preserve that is located within the survey area, and because of the nature of the project, its construction, and its location, there is no potential for the project to impact any special-status plant species that may be in the UCI Ecological Preserve, either in the survey area or in areas farther east. Although Michael Baker's field survey was conducted in November, outside of the typical plant blooming season, because the project site is an existing asphalt parking lot and associated ornamental vegetation, Michael Baker determined that all of the special-status plant species identified by the CNDDB, CIRP, and IPaC databases are not expected to occur within the project site.

Special-Status Wildlife

A total of forty-seven (47) special-status wildlife species have been recorded in the USGS Tustin, Laguna Beach, and Newport Beach, California 7.5-minute quadrangles by the CNDDB and IPaC databases (refer to Attachment D). Two (2) special-status wildlife species were detected within the survey area during the November 2021 field survey, coastal California gnatcatcher (Polioptila californica californica; a federally threatened species and California Species of Special Concern (SSC)) and yellow warbler (*Setophaga petechia*; a California SSC). The gnatcatcher was found foraging in the California buckwheat scrub in the southeastern end of the survey area and the yellow warbler was found wintering in the Goodding's willow – red willow riparian woodland and forest, also in the southeastern section of the survey area. Neither species would be expected to nest or forage within the project site due to a lack of any suitable habitat in the project site, and neither would be affected by the project. A northern harrier (*Circus hudsonius*; a California SSC) was observed foraging within the UCI Ecological Preserve in the distance, approximately 0.25 mile east of the survey area. This species may occasionally forage within the southeastern limits of the survey area but would not be expected to occur within the project site unless flying through.

Based on the results of the field survey and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, Michael Baker determined that the project site has a high potential to support foraging Cooper's hawks (Accipiter cooperii; a State Watch List species) and a high potential to support perching/roosting white-tailed kites (Elanus leucurus; a California Fully Protected species), with a low potential for kites to actively forage on-site. Due to the high levels of disturbance and lack of suitable nest trees, neither species would be expected to nest within the project site. Cooper's hawks are fairly common urban raptors that routinely hunt opportunistically, often targeting smaller birds. As a result, they can be expected to hunt on and around the project site. The surveying biologist previously observed a white-tailed kite foraging in the open space to the west of the project site, between the UCI

West Campus and California Avenue, as well as perching within the UCI West Campus parking lot just to the west of the project site boundaries, during an unrelated survey in April 2021, and this species is known to currently nest on the western edge of the University Hills complex, adjacent to the northeastern corner of the UCI Ecological Preserve. However, unlike Cooper's hawks, white-tailed kites are highly specific in their dietary preferences, with their diets in the southern California populations consisting almost entirely of three species of small mammals—California vole (*Microtus californicus*), house mouse (*Mus musculus*), and western harvest mouse (*Reithrodontomys megalotis*)—that would be unlikely to occur more than sparingly within a concrete parking lot relative to surrounding open space areas. Therefore, although white-tailed kites may perch in the parking lot and may on rare occasions find prey in the parking lot, there is no nesting habitat and the incidences of foraging on or immediately around the project site are likely to be very low. Neither of these species were detected within the survey area or observed incidentally in the immediate surrounding area during Michael Baker's November 2021 survey, although they are known to be present and resident in the vicinity.

All remaining special-status wildlife species identified by the CNDDB and IPaC databases either have a low potential or are not expected to occur within the project site.

Special-Status Vegetation Communities

Seven (7) special-status vegetation communities have been reported in the USGS Tustin, Laguna Beach, and Newport Beach, California 7.5-minute quadrangles by the CNDDB: Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, Southern Dune Scrub, Southern Foredunes, Southern Sycamore Alder Riparian Woodland, and Valley Needlegrass Grassland. These special-status vegetation communities identified by the CNDDB were not observed in the survey area during the field survey.

According to the latest draft of the *California Natural Communities List* (dated August 18, 2021), Goodding's willow – red willow riparian woodland and forest, California brittle bush – ashy buckwheat scrub, and Menzies' golden bush scrub are all considered sensitive natural communities with state sensitivity ranks of S3 (CDFW 2021f). Sensitive natural communities with sensitivity ranks of S1, S2, and S3 as listed in the California Natural Communities List are required to be addressed in the California Environmental Quality Act (CEQA) review process. However, none of these communities are located in or near the project site and none of them have any potential to be impacted by project construction, directly or indirectly and no further action is necessary.

Therefore, with implementation of mitigation measures BR-1, which would conduct pre-construction nesting bird surveys, impacts to special-status species would be reduced to a less than significant level.

b) Riparian Habitat: No Impact

c) Wetlands: No Impact

The project site has been previously developed with surface parking lots and a roadway segment, and is surrounded by development within the West Campus' Health Sciences Quad. Furthermore, the biological resources survey conducted on November 17, 2021 concluded that no riparian or wetland habitat exists on the project site.

Additionally, 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.

Therefore, the proposed project would not affect riparian or wetland habitats and no impact would occur. No mitigation is required.

d) Wildlife Corridors: Less than Significant Impact

Wildlife corridors and linkages are key features for wildlife movement between habitat patches. Wildlife corridors are generally defined as those areas that provide opportunities for individuals or local populations to conduct seasonal migrations, permanent dispersals, or daily commutes, while linkages generally refer to broader areas that provide movement opportunities for multiple keystone/focal species or allow for propagation of ecological processes (e.g., for movement of pollinators), often between areas of conserved land.

The project site is located across the street from undeveloped land that leads into the UCI Ecological Preserve. The UCI Ecological Preserve is a designated reserve under the Orange County Central/Coastal Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) and links to open space habitat to the south of SR-73. Areas to the south of SR-73 are also designated as special linkages under the NCCP/HCP connecting to the San Joaquin Hills and the Laguna Coast Wilderness to the east. In addition, there is open space remaining immediately to the east of the UCI West Campus, between the School of Medicine to the east and California Avenue to the west. A portion of this land on its southern end is currently under development, but the northern end terminates at Academy Way, less than 0.25 mile south of San Diego Creek. However, the project site is located entirely within an existing developed parking lot. Although wildlife is expected to be abundant in the open space areas to the east and west, the project site itself has very little capacity to function as any sort of migratory corridor or linkage due to the extensive use of the parking lots and academic buildings that are already present within and around the project footprint. There may be occasional movement of large mammals across the parking lot, but the project site itself is already entirely developed and its future construction is ultimately not expected to create any additional barriers than those that are already present and that currently serve as restrictions to wildlife movement. Therefore, impacts to wildlife would be less than significant.

e) Conflict with Applicable Policies: No Impact

As discussed above in 4.3(a), with the incorporation of project-specific mitigation measures BR-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: No Impact

The project site itself is not located within a Habitat Conservation Plan, Natural Community Conservation Plan, or any other habitat conservation plan. Therefore, no impacts would occur. No mitigation is required.

Mitigation Measures

BR-1: If project-related activities are to be initiated during the nesting season (January 1 to August 31), a pre-construction nesting bird clearance survey shall be conducted by a qualified biologist no more than three (3) days prior to the start of any vegetation removal or ground disturbing activities. The qualified biologist shall survey all suitable nesting habitat within the project impact area, and areas within a biologically defensible buffer zone surrounding the project impact area. If no active bird nests are detected during the clearance survey, project activities may begin, and no additional avoidance and minimization measures shall be required. If an active bird nest is found, the species shall be identified, and a "no-disturbance" buffer shall be established around the active nest. The size of the "no-disturbance" buffer shall be increased or decreased based on the judgement of the qualified biologist and level of activity and sensitivity of the species. The qualified biologist shall periodically monitor any active bird nests to determine if project-related activities occurring outside the "no-disturbance" buffer disturb the birds and if the buffer shall be increased. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, project activities within the "no-disturbance" buffer may occur following an additional survey by the qualified biologist to search for any new bird nests in the restricted area.

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 surface parking lots, Health Sciences Road, and ornamental landscaping, none of which would be considered an historical resource under Section 15064.5 of the CEQA Guidelines. Furthermore, LRDP EIR Table 4.4-2 lists campus buildings that would be at least 50 years old by the LRDP horizon year of 2025 and eligible for the Register of Historical Resources based on age (page 4.4-15). None of the structures listed are located on the project site. Therefore, the proposed project would not cause a substantial adverse change to an historical resource and no impact occur. No mitigation is required.

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. Two archaeological sites have been discovered and recorded in the

West Campus, one of which is located within the project site boundary where an andesite core tool was discovered along with fossil remains. However, both the archaeological and paleontological resources were previously recovered and recorded. To date there has been no evidence of additional archaeological resources within the project boundary, but there is possibility that unknown archaeological remains could occur beneath the ground surface (LRDP EIR, page 4.4-4). Earth moving activities could possibly uncover previously undetected archaeological remains associated with prehistoric cultures, and a loss of a significant archaeological resource could result if such materials are not properly identified. 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 archeologist, determines that the remains appear to be Native American, s/he would contact the Native American Heritage Commission (NAHC) within 24 hours, who would in turn, notify the person they identify as the most likely descendent (MLD) of the human remains. Further actions would be determined by the MLD who has 48 hours after notification of the NAHC to make recommendations regarding the disposition of the remains. Therefore, compliance with the California Health and Safety Code and Public Resources Code would reduce potential impacts to human remains to a less than significant level. No mitigation is required.

Mitigation Measures

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

a. Perform appropriate technical analyses;

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

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

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., water conservation measures, meet or exceed LEED Silver rating with a goal of LEED Platinum, exceed Title 24 by 20 percent, use of energy efficient lighting, use of electricity for all space and water heating, installation of infrastructure for photovoltaics, etc.) in compliance with the UC Sustainable Practices Policy. In order for the campus to reach the carbon neutrality goal of zero emissions of scope 1 and 2 sources by 2025 and scope 3 sources by 2050, as required by the Carbon Neutrality Initiative and the UC Sustainable Practices Policy, the campus has identified a tiered set of strategies. These strategies include low-carbon growth through green building programs, reducing existing emissions through deep energy efficiency, replacing fossil fuel-based energy by deploying of on-site renewable energy and procuring off-site renewable energy, and mitigating the remaining carbon emissions through offset programs. Furthermore, 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-half mile southwest 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. No mitigation is required.

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. Additionally, a Preliminary Geotechnical Data Report was prepared for the Health Sciences Quad, which indicated that only a small area is susceptible to liquefaction. However, due to the density of the shallow soils and the depth to the groundwater table, liquefaction is not likely to occur at the project site. 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 level pavement with minimal sloping in existing landscaped areas, which presents 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 proposed project would not increase impermeable surfaces on the project site, and soil erosion is not anticipated to occur during operation. As discussed in Section 4.8, Hydrology and Water Quality, in the event that storm water runoff were to increase, velocities would be reduced to preexisting conditions to the extent feasible (LRDP mitigation measure Hyd-1A). Therefore, impacts due to soil erosion would be less than significant. No additional mitigation is required.

c) Soil Instability: Less than Significant Impact

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.

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[1] https://maps.conservation.ca.gov/cgs/informationwarehouse/landslides/. January 3, 2022.

d) Expansive Soils: Less than Significant Impact

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

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 30 months. The project is anticipated to require approximately 15,500 CY of excavation with approximately 14,000 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 1,229.20 $MTCO_2e$ of GHG emissions over the course of construction. Construction GHG emissions are typically summed and amortized over a 30-year period, then added to the operational emissions. The amortized project emissions would be 40.97 $MTCO_2e$ 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	$MTCO_2e$/yr
Construction Year 1 (2022)	115.23
Construction Year 2 (2023)	503.57
Construction Year 3 (2024)	554.57
Construction Year 4 (2025)	58.83
Total Construction Emissions	1,229.20
30-Year Amortized Construction	40.97
Source: CalEEMod version 2020.4.0. Refer to Appendix C for model outputs.	

Operational Greenhouse Gas Emissions

Operational 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 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.

Table 4.7-2
Project Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Construction Amortized Over 30 Years	40.97
Area Source	<0.01
Energy	647.16
Mobile	596.53
Waste	4.80
Water	364.33
Total	**1,653.80**
SCAQMD Project Threshold	*3,000*
Exceeds Threshold?	**No**
Source: CalEEMod version 2020.4.0. Refer to Appendix C for model outputs.	

As shown in Table 4.7-2, project operational GHG emissions, combined with construction-related GHG emissions, would generate approximately 1,653.80 $MTCO_2e$ annually. The proposed project would not exceed the SCAQMD GHG threshold of 3,000 $MTCO_2e$ per year. Therefore, project-related GHG emissions would be less than significant, and no mitigation is required.

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

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. These areas of policy are applicable to new buildings and major renovations on the UCI campus.

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. Although the Policy on Sustainable Practice includes a goal of LEED "Silver" standards, the project has a goal to achieve "Platinum". The project would also not use natural gas for space and water heating if feasible. Accordingly, the project will exceed the energy efficiency standards in the 2019 California Building Standards Code by at least 20 percent.

UCI's Sustainable Transportation Program utilizes various Transportation Demand Management (TDM) measures and was created with the goal to reduce the total number of vehicle trips made to the campus by faculty, staff, and students and reduce commute emissions. The project would not eliminate or reduce any existing TDM measures offered by UCI's Transportation and Distribution Service. Students, faculty, and staff that access the project would be eligible to utilize the TDM services provided by the UCI Transportation and Distribution Service.

The project would be constructed within the West Campus, adjacent to existing UCI buildings and facilities, including Gross Hall, Hewitt Hall, and the Gavin Herbert Eye Institute. As the project is within a developed area of the campus, it would benefit from the surrounding multimodal transportation systems, including sidewalks/walking trails, bicycle infrastructure, municipal bus service, and campus shuttles. The project would connect to a campus-wide network of bike/pedestrian trail system. Additionally, UCI has replaced its diesel bus fleet with an all-electric fleet, to reduce GHG emissions. The proposed project would benefit from the implementation of an optimized fleet, which would also server the project site.

The project would not conflict with any of the policy's sustainable practices, including campus-wide clean energy, energy efficiency, and renewable energy, and sustainable transportation. As discussed above, the project is subject to the practices in the UC Sustainable Practices Policy and the UCI CAP. The project would be required to comply with the GHG reduction efforts outlined in the CAP and all of UCI's sustainability programs, including green building design, renewable energy, and energy efficiency measures, among others, to reduce its carbon footprint. The project's GHG emissions (1,653.80 $MTCO_2e$ 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, the proposed project would not conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions and no impact would occur. No mitigation is required.

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

The proposed facilities would be similar to those already present on campus, specifically within the Health Sciences Quad where the project site is located. These facilities include wet laboratories that use a variety of chemicals, compounds, and other materials that are considered hazardous. Hazardous material types that may be used as part of the proposed project include, but are not limited to, oxidizers, oxidizing gas, flammable solid, flammable gas, inert gas, unstable reactive, water reactive, toxic/highly toxic, pyrophoric, organic peroxide, combustible liquid, cryogenics, chemicals, and corrosives, as well as commercial cleaning products and landscape maintenance chemicals.

However, the type, form, and concentrations of potentially hazardous materials proposed for use during operation and maintenance at the proposed project and how these would be transported, used, and stored, would be consistent with existing practices by UCI's Office of Environmental Health and Safety. Additionally, a Hazardous Materials Technical Report, estimating anticipated chemical quantities that can be stored and used, would be prepared and submitted to the Fire Marshal for review per Section 414.1.3 of the CBC, upon submission for plan check. A Final Hazardous Materials Technical Report is required prior to occupancy to reflect the requirements of known occupants.

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

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

c) Proximity to Schools: No Impact

There are no schools located within one-quarter mile of the project site. Therefore, the proposed 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 Main 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.[1] Additionally, as reported in the 2007 LRDP EIR, no accidents have occurred near the campus since 1981 (page 4.6-33).

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

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

In the event of a road closure, prior to the start of construction, the contractor would comply with

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[1] https://files.ocair.com/media/2021-02/JWA_AELUP-April-17-2008.pdf?VersionId=cB0byJjdad9OuY5im7Oaj5aWaT1FS.vD. Accessed January 4, 2022.

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 both construction and operation would comply with UCI's Emergency Response Plan that addresses roles and responsibilities, communications, training, and procedures in order to respond to emergency situations. Therefore, with implementation of LRDP EIR mitigation measure Haz-6A and compliance with the Emergency Response Plan, potential impacts to emergency response on or surrounding the campus would be reduced to a less than significant impact.

h) Wildland Fires: Less than Significant Impact

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. However, due to the limited quantities of native vegetation on the campus it is unlikely for a large scale wildfire to occur on the campus (page 4.6-36). Surrounding uses include Gross Hall, Hewitt Hall, Health Sciences Road, and surface parking Lot 81 and Lot 84 to the north; surface parking Lot 70 and undeveloped land to the south across Michael Drake Drive; a portion of Lot 82, ornamental landscaping, and West Peltason Drive to the east; a portion of surface parking Lot 83, surface parking Lot HT, and the Health Sciences Parking Structure (currently under construction) to the west; and the Gavin Herbert Eye Institute and the Susan and Henry Samueli College of Health Sciences & Sue and Bill Gross Nursing and Health Sciences Hall (currently under construction) and to the southwest. Therefore, the proposed project would not subject people or structures to a significant risk of loss, injury, or death involving wildland fires and impacts would be less than significant. No mitigation is required.

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 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 to San Diego Creek 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 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 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 level through compliance with the conditions of the General Construction Storm Water Permit and LRDP EIR mitigation measures Hyd-2A and 2B. Therefore, impacts due to erosion would be reduced to a less than significant level.

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

The project site has been previously developed with surface parking lots, a roadway, and ornamental landscaping. Therefore, the rate and amount of runoff from the proposed project would be similar to rate and runoff of the current uses. 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 the 100-year 24-hour storm event. 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 project site is proposed to drain from north to south. As part of the project, the existing 12-inch storm drain located within Health Sciences Road would be rerouted and upgraded to 18 inches. Storm drainage would be collected and treated on site through best management practices (BMPs). Low impact development (LID) features, such as the proposed bioretention features located southwest of the structure, would be implemented to retain stormwater flows from the project site before released then conveyed to a proposed eight-inch storm drain located southwest of the structure.

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

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 by existing development (LRDP EIR, pages 4.7-24 through 25). Therefore, impacts due to the proposed project due to seiche, tsunami, or mudflow would be less than significant. No mitigation is required.

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

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. Additionally, the proposed project would implement and comply with the UCI Stormwater Management Plan (SWP)[1] as required by MS4 permit requirements under the Clean Water Act. All projects constructed on the campus are subject to review by the Office of Environmental Health and Safety, who ensure project compliance with the SWP and NPDES permit. Therefore, in compliance with the UCI SWP, the proposed 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

[1] https://ehs.uci.edu/enviro/storm-water/_pdf/UCI_SWMP.pdf. Accessed January 14, 2022.

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 construct academic, laboratory, research, administrative, and support space in the West Campus. Surrounding uses include Gross Hall, Hewitt Hall, Health Sciences Road, and surface parking Lot 81 and Lot 84 to the north; surface parking Lot 70 and undeveloped land to the south across Michael Drake Drive; a portion of Lot 82, ornamental landscaping, and West Peltason Drive to the east; a portion of surface parking Lot 83, surface parking Lot HT, and the Health Sciences Parking Structure (currently under construction) to the west; and the Gavin Herbert Eye Institute and the Susan and Henry Samueli College of Health Sciences & Sue and Bill Gross Nursing and Health Sciences Hall (currently under construction) and to the southwest. The addition of academic, laboratory, research, administrative, and support space in the West Campus would be consistent with existing adjacent uses.

The proposed project would not affect the land use pattern of the surrounding community, either on- or off-campus. No existing bikeways, roadways, or driveways would be removed as part of the project. New pedestrian walkways would be constructed to increase connectivity of the Health Sciences Quad, including a pedestrian arrival court and pathway leading from the project site, Gross Hall, and Hewitt Hall to Gavin Herbert Eye Institute to the southwest. The existing Health Sciences Road, which currently bisects the project site, would be realigned around the eastern boundary of the project site. 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: No Impact

As discussed in Section 2.0, Project Description, the applicable land use plan is the 2007 LRDP and the University is the only agency with land use jurisdiction over projects located on the campus. The project site is designated as Academic and Support in the LRDP, which allows for classrooms, instructional and research laboratories, and administrative and support facilities. Furthermore, the proposed approximately 250,000 GSF is within the total space program identified for the West Campus in the LRDP and analyzed in the LRDP EIR.

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

Mitigation Measures

No mitigation measures are required.

4.11 Noise

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

Discussion

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

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

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 adjacent to the classroom and research buildings north and northwest of the project site as well as existing residential located approximately 572 feet from existing to the northeast. Other sensitive land uses are located more than approximately 2,400 feet away and are separated by streets and other buildings that would obstruct construction noise to insignificant levels.

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 4.11-1.

As noted above, the closest sensitive receptors to the project are the classroom and research buildings directly to the north and northwest and the residential use to the northeast. The equipment used near the existing campus facilities 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.

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.

Table 4.11-1
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.

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. As discussed above, the 2007 LRDP EIR uses a construction noise threshold of 75 dBA (Leq 12 hour) between 7:00 a.m. and 7:00 p.m. at any noise-sensitive land use (LRDP EIR, page 4.9-31).

The noise levels calculated in Table 4.11-2 show estimated exterior construction noise at the closest receptors. UCI buildings are located directly to the north. Residential uses are located approximately 572 feet to the northeast of the project site. The distances used in the model are changed to reflect that construction would take place throughout the project site and would not take place extensively on the edge of the project site. 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 4.11-2 conservatively do not account for attenuation from the perimeter walls along each of the existing sensitive receptors to the north and northeast.

Table 4.11-2
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	Northeast	606	62.1	75	No
	UCI Buildings	North	150	74.3	75	No
Site Preparation	Residential	Northeast	606	57.4	75	No
	UCI Buildings	North	150	69.6	75	No
Grading	Residential	Northeast	606	61.0	75	No
	UCI Buildings	North	150	73.1	75	No
Building Construction	Residential	Northeast	606	59.1	75	No
	UCI Buildings	North	150	71.2	75	No
Paving	Residential	Northeast	606	55.0	75	No
	UCI Buildings	North	150	67.1	75	No
Architectural Coating	Residential	Northeast	606	52.0	75	No
	UCI Buildings	North	150	64.1	75	No

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 the 2007 LRDP EIR.

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 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 4.11-2 shows that construction noise levels would not exceed the 75-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 proposed project would construct an approximately 250,000 GSF building that would consist of laboratory, academic, research, administrative, and support space. Thus, the operational noise (stationary sources and traffic) associated with the proposed project would be similar to the existing surrounding academic buildings and existing noise levels.

After completion of construction activities, typical noise associated with university facility land uses include traffic, talking, and delivery drop offs. Noise from 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 proposed project 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. 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. 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.

The HVAC units associated with the proposed university facility would be located 150 feet or more from the closest sensitive receptors and would be located atop the seven-story structure (i.e., the closest sensitive receptors are at a lower elevation than the proposed project). 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-bys range from 53 to 61 dBA 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.

Parking currently occurs on-site and also occurs at the adjacent properties under existing conditions. Nominal parking noise would occur on-site within parking stalls and would be consistent with existing conditions. 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. Project implementation would result in an increase of 551 average daily trips (ADT). 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.

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

b) Groundborne Vibration: Less than Significant Impact

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 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.[1]

Table 4.11-3 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 4.11-3, 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 4.11-3
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 UCI buildings directly to the north and northwest of the construction area. As shown in Table 4.11-3, at 50 feet, construction equipment vibration velocities would not exceed 0.032 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. No mitigation is required.

c) Private Airstrips and Public Airport Noise: No Impact

The nearest airport is the John Wayne Airport located approximately 2.15-miles to the northwest of the project site. According to the John Wayne Airport 2019 Annual 60-75 (5 dB intervals) CNEL Noise Contours, the project site is located outside the 60 dBA CNEL noise contour for John Wayne

[1] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, April 2020.

Airport. Therefore, the proposed project would not be subject to aircraft noise in excess of regulatory limits and no impact would occur. No mitigation is required.

Mitigation Measures

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

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

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

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

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

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

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

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

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

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

The proposed project, as described in Section 2.0, Project Description, would construct a proposed facility to house academic, laboratory, research, administrative, and support space. In order to operate the facility, it is anticipated approximately 375 new full-time faculty and staff would be hired, less than 0.1 percent of the existing on-campus population. The academic and laboratory space would be utilized by the existing student population and 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[1] on the UCI campus. The estimate of approximately 375 new faculty and

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

staff would result in a faculty and staff population of approximately 9,206, 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).

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

b) Displace Existing People or Housing: No Impact

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

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

As discussed in Section 4.11, Population and Housing, the proposed project would hire 375 full-time faculty and staff; however, it would not surpass the campus' population capacities in the 2007 LRDP, which were previously analyzed in the 2007 LRDP EIR. Therefore, the proposed project would not result in an increased demand for fire services than what was previously analyzed in the 2007 LRDP EIR. Furthermore, the project site is located within a five travel minute coverage area by OCFA. In 2016, the average response time to UCI was six minutes and 56 seconds, which is within the standard adopted by OCFA, where a unit should be on-site within seven minutes and 20 seconds for 80 percent of emergency calls.[1]

Therefore, 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 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 one-half mile northeast of the project site. The UCIPD provides all police services (all patrol, investigation, crime prevention education, and related law enforcement duties) for the campus (LRDP EIR, page 4.11-3).

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

c) Schools: Less than Significant

The Irvine Unified School District (IUSD) provides kindergarten through grade 12 (k-12) public education services for school age children residing on or near the UCI campus. As discussed

[1] http://www.ocfa.org/Uploads/Orange%20County%20Fire%20Authority%20SOC_FINAL.pdf. Accessed December 18, 2021.

above and in Section 4.11, Population and Housing, the proposed project would not increase the campus population beyond what was planned for in the 2007 LRDP and analyzed in its EIR. Therefore, the proposed project would not require the need for new off-campus educational facilities and impacts to services would be less than significant. No mitigation is required.

d) Parks: Less than Significant Impact

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

e) Other Public Facilities: Less than Significant

As discussed above and in Section 4.11, Population and Housing, the proposed project would not substantially increase on-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 and would not result in the need for the construction of new facilities within the surrounding community. Therefore, impacts to other public facilities would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.14 Recreation

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

Discussion

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

a) Physically Deteriorate Existing Facilities: Less than Significant Impact

As discussed in Section 4.11, Population and Housing, the proposed project would not substantially increase campus populations above what was previously analyzed in the LRDP EIR and, therefore, would not result in accelerated deterioration of recreational uses on or off-campus. In addition, campus populations have access to on-campus recreational facilities, including the Anteater Recreation Center (ARC), Aldrich Park, and Crawford Athletics Complex. The 2007 LRDP EIR assumed that the current level of maintenance of campus recreational facilities would continue and that substantial facility deterioration would not occur (page 4.12-5). Therefore, impacts to existing recreational facilities would be less than significant. No mitigation is required.

b) Construction of Recreational Facilities: No Impact

No recreational facilities are proposed as part of the project. Additionally, as discussed in

Section 4.11, Population and Housing, the proposed project would not directly induce unplanned population growth and would not require the construction of new or expansion of existing recreational facilities. Therefore, no impacts due to construction or expansion of recreational facilities as a result of the project would occur. No mitigation is required.

Mitigation Measures

No mitigation measures are required.

4.15 Transportation

Issues	Potentially Significant Impact	Project Impact Adequately Addressed in LRDP EIR	Less Than Significant with Project-level Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
a) Conflict with 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, the primary vehicle access to the project site would occur via the intersection of Michael Drake Drive and Health Sciences Road. Additional vehicle access to the project site would occur via the existing West Peltason Drive and Health

Sciences Road intersection to the east of the project site and the California Avenue and Theory intersection, currently under construction, and California Avenue and College of Health Sciences intersection, currently under design, to the west of the project site. 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 beyond realignment of Health Sciences Road, which bisects the project site. 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

Screening Evaluation

Table 4.15-1 summarizes the findings of the screening evaluation. As shown in Table 4.15-1, the Project does not meet at least one of the screening criteria at this time. The Project is located within a half mile of a to a high-quality transit corridor; however, bus headways are currently greater than 15 minutes due to pandemic-related service reductions and it is unknown when normal bus operation will resume. In addition, the City of Irvine does not recognize the area as a TPA. Therefore, a VMT analysis has been prepared.

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 utilize 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 4.15-2 summarizes the trip rates and corresponding estimated trip generation for the proposed project.

Table 4.15-1
Screening Evaluation Summary

Category	Description	Project	Meets Criteria?
Trip Generation (Small Project)	Does the project generate less than 250trips per day?	The project results in approximately 551 trips per day.	No
Proximity to High Quality Transit (Transit Priority Area)	Is the project within a half mile of high-quality transit stops or corridor, and meet the other four requirements: Has a Floor Area Ratio of greater than0.75 Includes less parking than required by the jurisdiction Is consistent with the RTP/SCS Does not replace affordable housing units witha smaller number of moderate, or high-income residential units Is the project in one of the two TPAs identifiedby the City of Irvine VMT Guidelines?	Yes, the project is within a half mile from a high-quality corridor. Before March 2020, the Anteater Express M Line had service intervals no longer than 15 minutes during peak commute hours. However, current bus headways are every30 minutes under pandemic conditions. The project is not in one of the twoTPAs identified by the City of Irvine.	Currently, due to the pandemic the Anteater Express is operating with reduced services.
Locally Serving Use	Is the project 100,000 square feet or less of retail? Is the project a daycare or K-12 local serving public school?	The project is a University use andis not considered a locally serving use per the City of Irvine VMT Guidelines.	No
Affordable Housing	Does the project consist of 100% affordable units?	The project is a non-residential use	No
Map-Based(Low-VMT Area)	Is the project in a low-VMT Area?	The City of Irvine does not use the map-based screening criteria, therefore no maps are available for the project area.	No

Table 4.15-2
Trip Generation Summary

Land Use	Amount	Units	AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
Trip Rates									
Faculty/Staff	Person		0.12	0.01	0.13	0.03	0.11	0.14	1.47
Trip Generation									
Faculty/Staff	375	Per	44	4	48	11	41	52	551
Net Increase in Trips			**44**	**4**	**48**	**11**	**41**	**52**	**551**
Trip Rate Source: UCI Main Campus Traffic Model (MCTM)ADT = average daily trips Per = person									

As shown in Table 4.15-2 the project would generate approximately 551 daily trips, 48 trips during the AM peak hour and 52 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.

Proximity to High Quality Transit

OPR's Technical Advisory suggests that a project can be presumed to have a less than significant impact 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 bus 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.

Three Anteater Express stops are located within a half mile walk of the project site. The project site is serviced by the M line. The closest bus stop is located less than a quarter mile walk on West Peltason Drive opposite Lot 84. Two other stops are within a half mile walk at the West Peltason Drive at Academy Way intersection (approximately 0.35 miles away) and East Peltason Drive at the Multipurpose Science and Technology Building (approximately 0.50 miles away).

Prior to March 2020 (pre-pandemic conditions) headways for the M Line were 6 to 10 minutes during the day and 25 minutes after 7:00 PM. Currently (January 2022), the M Line is operating on reduced service, with the first departure at 4:00 PM and the last departure at 10:30 PM with headways of 30 minutes.

Therefore, under pre-pandemic conditions 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. However, since there is no indication on when normal service would resume, the project is not presumed to be less than significant under this criteria.

In addition, the City of Irvine utilizes a similar screening criteria for projects located near high-quality transit. The City has identified two existing TPAs 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.

VMT Impact Analysis

A 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. The City of Irvine's impact analysis methodology and significance thresholds for a non-residential project are utilized.

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 in ITAM TC TAZ zone—TAZ 564. The project's land use was added to the TAZ zone existing conditions (2018 baseline) and a full ITAM TC run was conducted. 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 non-residential VMT and the net change in total employees are used to estimate the project change VMT rate per capita based on the existing condition as a baseline. 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.

The ITAM TC estimates do not account for TDM strategies already in place by the UCI campus, specifically, UCI's Sustainable Transportation Program, which is a feature where employees would be eligible and encouraged to utilize the TDM programs offered by the UCI Transportation and Distribution Service. Approximately 67 percent of employees use more sustainable commuting options.

CAPCOA provides substantial evidence that TDM programs that are monitored and adjusted can achieve up to a 21% reduction in commute VMT. Appendix E summarizes the TDM programs available through UCI's Sustainable Transportation Program, and an approximate VMT reduction based on CAPCOA's quantification methodology.

The City of Irvine recognizes participation in a TDM program (such as Spectrumotion and Irvine Business Complex) to achieve up to 5% reduction in VMT. Since UCI's Sustainable Transportation Program is a project feature, ITAM TC estimates are adjusted to conservatively include a 5% reduction in VMT.

Table 4.15-3 summarizes the ITAM TC VMT estimates for conditions with and without the project. As shown in Table 4.15-3, ITAM TC estimates that the net change of non-residential VMT is 11,616 under conditions with the project. ITAM TC also estimates that the project would result in a net increase in employment of 270 with the project. Therefore, the net change in non-residential VMT and total employment results in a project change VMT rate of 43.02 VMT per capita (per employee). As noted above, the ITAM TC estimate does not account for TDM programs already in place. Therefore, the VMT rate was adjusted. The adjusted VMT rate is 40.87 VMT per employee.

Table 4-15-3
ITAM TC VMT Estimates

Area	Category	Baseline	Baseline (With Project[1])	Net Change
Non-Residential VMT				
Orange County	Non-Residential VMT	83,065,765	83,077,381	11,616
	Employment	1,707,045	1,707,315	270
Project Change VMT Rate (Non-Residential VMT per Employee)				43.02
Adjusted VMT Rate[2]				**40.87**
Source: ITAM TC [1] Project = 375 staff/faculty [2] 5% Reduction with UCI's Sustainable Transportation Program				

Table 4.15-4 provides a comparison between the project VMT per capita (per employee) and the significance threshold.

Table 4.15-4
VMT Impact Summary

Description	VMT per Employee
Adjusted Project Change VMT Rate (per Employee)	40.87
Countywide Average (Baseline)	48.66
Threshold of Significance (Baseline minus 15%)	41.36
Difference from Threshold of Significance	-0.49 or -1.1%
Is Project above or below Regional Threshold?	Below
Significant Impact?	No

As shown, the project results in a VMT per capita (per employee) of 40.87. The threshold of significance is 41.36 VMT per capita (per employee). 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).*Multimodal Transportation Networks Impact 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.

A 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.

Sidewalks and shared use pathways will be provided on-site, providing pedestrian and bicycle access. Sidewalks and pedestrian pathways are site development design features that will make walking comfortable and a low-stress option.

In regard to bicycle accessibility, the project is accessible by bike lanes on Michael Drake Drive. West Peltason Drive and California Avenue are also bicycle accessible roadways. This allows bicycles to access the project and also get in and around the 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.

There are also bus transit stops available for students, staff, and visitors 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. Sidewalks will be provided which will link to those on-campus within the Health Science Quad and off campus to Michael Drake Drive, providing good pedestrian access. 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 based on the multimodal transportation screening threshold.

Land Use Impact Analysis

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.

Another 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 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.

RTP/SCS Consistency (Cumulative Impact Analysis)

The project has also been evaluated with consideration to consistency with SCAG's Regional 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 2020 SCAG's Regional Council adopted Connect SoCal. 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 consistent with the land use designation in 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.

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 adjacent to the project site within the existing staging areas currently in use for the College of Health Sciences and Nursing Building and Health Sciences Parking Structure projects currently under construction to the west of the proposed project. Haul routes during construction would be along Bison Avenue, California Avenue, and East and West Peltason Drives, with site access located at the intersection of Michael Drake Drive and Health Sciences Road. As described in Section 4.8, Hazards and Hazardous Materials, all roadway and 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, the primary vehicle access to the project site would occur via the intersection of Michael Drake Drive and Health Sciences Road. Additional vehicle access to the project site would occur via the existing West Peltason Drive and Health Sciences Road intersection to the east of the project site and the California Avenue and Theory intersection, currently under construction, and California Avenue and College of Health Sciences intersection, currently under design, to the west of the project site. 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 during operation. 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 with Mitigation Incorporated

Cultural fieldwork surveys were conducted in 1999 as part of the adjacent University Research Park project to the west of the project site across California Avenue. As discussed in Section 4.4, Cultural Resources, shellfish, evidence of prehistoric food remains, and prehistoric stone tool fragments were uncovered near the surface and recovered by a qualified archaeologist. Further field investigation of the site, which extended from the University Research Park into the Health Sciences Quad and the project site, found no indications of additional buried cultural deposits (LRDP EIR, page 4.4-4). No evidence of the site being eligible for listing on a historical register was been uncovered during the previous site investigations. Although no buried cultural resources have been uncovered during the previous investigation, earth-moving activities during project construction could uncover cultural resources. With implementation of mitigation measures, TCR-1, 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 Native American monitor, potential impacts would be less than significant.

b) Resources Significance to a California Native American Tribe: Less than Significant Impact with 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 January 4, 2022. UCI has yet to receive notification from either entity to initiate consultation regarding the project or the site. However, as is the practice for all major capital projects, UCI will continue to work with the tribes at their request. 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, potential impacts to tribal cultural resources 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 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 10-inch line located in Health Sciences Road, recycled water through an existing six-inch that currently exists within Health Sciences Road but would be rerouted around the proposed structure, sanitary sewer water through an existing eight-inch line northeast of the project site, and fire water through the existing 10-inch water line. To provide on-site electricity, the proposed project would connect to UCI's electrical substation via an existing 12-kilovolt (kV) that currently exists within Health Sciences Road that would be rerouted around the project site.

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

b) Water Supplies: Less than Significant Impact

The 2015 IRWD Urban Water Management Plan (UWMP, 2015) projects district-wide water supply availability and demand through 2035, including the 2007 LRDP buildout. IRWD staff in consultation with UCI reviewed projected water service demand related to implementation of the 2007 LRDP for consistency with the 2005 UWMP and concluded that water supply reliability would not be compromised (LRDP EIR, page 4.14-17). Because the proposed project does not increase campus population or estimated water demand beyond what was analyzed in the 2007 LRDP EIR, the irrigation needs throughout the campus would continue to be fully met through reclaimed water supplies.

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

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

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

c) Wastewater Capacity: Less than Significant Impact

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

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 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 voluntary compliance with the State Agency Integrated Waste Management Plan. Furthermore, the campus currently has an 83 percent diversion rate from local landfills that has been achieved through recycling, composting, and reusing. Continued outreach programs, increased sustainable purchasing options, and proper hazardous waste disposal have the campus on track to reach 95 percent, or “zero waste”. The 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 proposed project would not violate solid waste regulations and no impact would occur. No mitigation is required.

Mitigation Measures

No mitigation measures required.

4.18 Wildfire

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

Discussion

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

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

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 roadways, such as Health Sciences Drive or Michael Drake 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 would not substantially impair an adopted emergency response plan and impacts would be less than significant. 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. As discussed in Section 4.8, Hazards and Hazardous Materials and the LRDP EIR, due to the limited quantities of native vegetation it is unlikely for a large scale wildfire to occur on the campus (page 4.6-36). The proposed project site is characterized by some paved and landscaped sloping and is surrounded by urban development, such as built structures and roadways. Additionally, fire water would be provided via the existing 10-inch water line located in Health Sciences Road.

The California State Board of Forestry and Fire Prevention has identified areas where the State has primary financial responsibility for preventing and suppressing fires, and are referred to as State Responsibility Areas (SRAs).[2] Lands where neither the State nor federal government has any legal responsibility for providing fire protection are referred to as Local Responsibility Areas (LRAs). UCI, including the proposed project site, is located in a LRA and the Orange County Fire Authority (OCFA) is responsible for fire prevention and suppression services. As shown in mapping by CalFire, the campus is not located in a LRA Very High Fire Hazard Severity Zone (VHFHSZ). 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.

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[1] https://em.uci.edu/_pdf/emergency-operations-plan.pdf. Accessed December 5, 2021.
[2] https://bof.fire.ca.gov/projects-and-programs/state-responsibility-area-viewer/. Accessed December 5, 2021.

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. Additionally, as discussed in Section 4.17, Utilities and Service Systems, the site is adequately served by existing access roads and utilities that would be connected within developed areas surrounding the project site. Therefore, the proposed project would not require the installation or maintenance of infrastructure that would exacerbate fire risk and impacts would be less than significant. No mitigation is required.

Mitigation Measures

No mitigation required.

4.19 Mandatory Findings of Significance

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

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

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

As discussed under Sections 4.1 through 4.18, no significant environmental impacts that are not mitigatable were identified in the responses to questions regarding project effects. Although the project site has been previously developed and is surrounded by urban development, there is potential for wildlife occurrence, specifically avian species, which could be impacted during construction due to the undeveloped land located south of the project site across Michael Drake Drive. However, project-level mitigation measure BR-1 would reduce impacts to a less than significant level by requiring nesting bird surveys three days prior to the start of construction and protocols to follow if a nest is found during the survey.

There are no known historic resources on site. 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, paleontological, and Native American monitoring during earthmoving activities and protocols to follow if resources are unearthed, would reduce impacts to a less than significant level.

b) Cumulatively Considerable Impacts: Less Than Significant Impact

Long-term environmental consequences resulting from the cumulative effect of completing development through implementation of the 2007 LRDP were thoroughly evaluated in the 2007 LRDP EIR. As discussed in Section 2.0, Project Description, the project is consistent with the LRDP land use policies. 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 this IS/MND. As discussed in Sections 4.1 through 4.18, project-level impacts have been determined to be less than significant, no impact, or mitigated to a less than significant level. Therefore, the proposed project would not result in cumulatively considerable impacts.

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 mitigation measures. 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 due to direct or indirect effects on humans would be less than significant.

5.0 PREPARERS

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APPENDIX A

Air Quality Assessment

Air Quality Assessment
Falling Leaves Foundation
Medical Innovation Building Project
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) Falling Leaves Foundation Medical Innovation Building 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 Project site is in UCI's West Campus, northwest of the Michael Drake Drive and Health Sciences Road 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 Health Science Road.

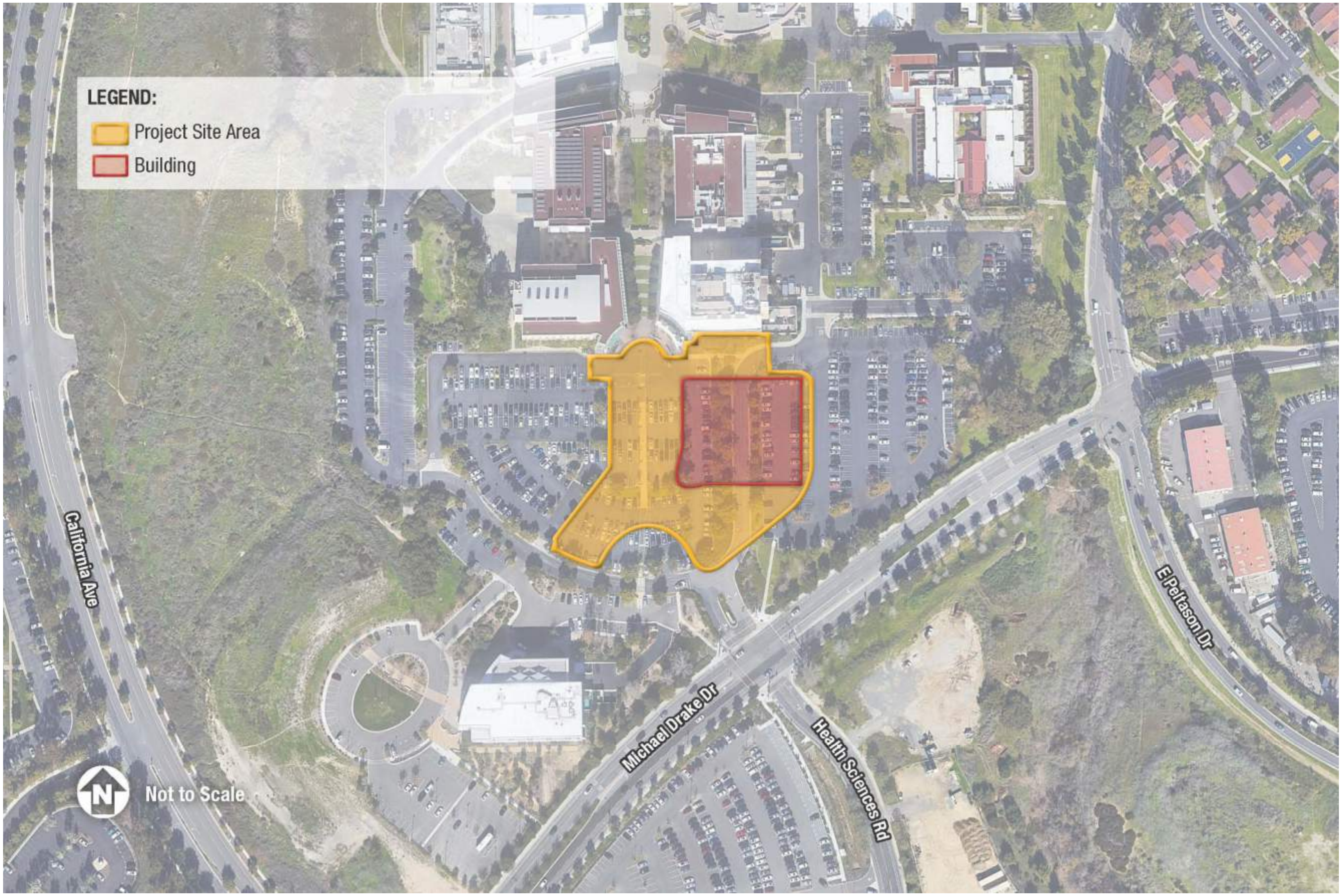
1.2 Project Description

The University of California, Irvine (UCI) is proposing the Falling Leaves Foundation Medical Innovation Building project, which would demolish portions of the existing surface parking Lots 82 and 83 and would construct an approximately 250,000-gross-square-foot (GSF) facility within the UCI West Campus to support collaborative, interdisciplinary, and innovative research in medicine and other health sciences disciplines; see **Exhibit 3: Conceptual Site Plan**. Proposed uses to be constructed within the new facility includes academic, laboratory, research, administrative, and support space. Additional improvements include realignment of the existing Health Sciences Road, landscaping, and lighting. Surrounding uses to the project site include Gross Hall, Hewitt Hall, and surface parking to the north; Gavin Herbert Eye Institute and Michael Drake Drive to the south; West Peltason Drive to the east; and surface parking to the west.

Project construction is anticipated to start in October 2022 and end by March 2025. Building occupancy would occur by summer of 2025 before the start of the new school year. Earthwork during project construction would include approximately 15,500 cubic yards (CY) of cut and 1,500 CY of fill with an approximate net export of 14,000 CY.

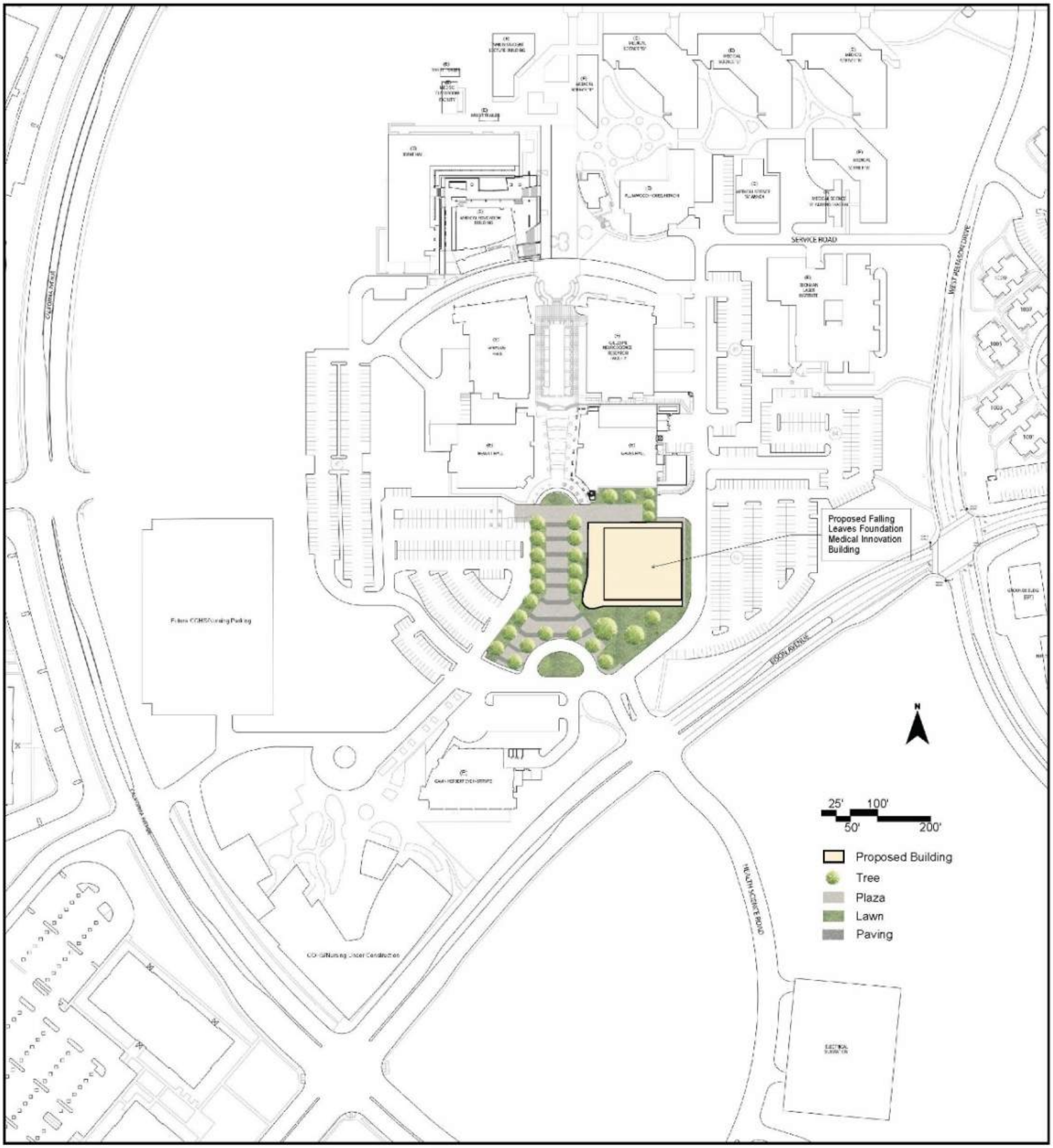
Exhibit 1: Regional Vicinity

Exhibit 2: Site Vicinity



Source: Google Earth, 2022.

Exhibit 3: Conceptual Site Plan



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

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

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.
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.

Table 1: Air Contaminants and Associated Public Health Concerns		
Pollutant	**Major Man-Made Sources**	**Human Health Effects**
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.
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 January 3, 2022.		

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, NO_2, PM_{10}, and $PM_{2.5}$ is the Mission Viejo – 26081 Via Pera Monitoring Station (located approximately 10.2 miles east of the Project). The closest monitoring station that measures NO_2 is the Anaheim-Pampas Lane Monitoring Station (located approximately 13.8 miles north of the Project). Local air quality data from 2018 to 2020 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	2018	2019	2020
Ozone (O_3)[1]			
1-hour Maximum Concentration (ppm)	0.121	0.106	0.171
8-hour Maximum Concentration (ppm)	0.088	0.087	0.122
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	2	3	20
NAAQS 8-hour (>0.070 ppm)	9	11	32
Carbon Monoxide (CO)[1]			
1-hour Maximum Concentration (ppm)	1.197	0.963	1.685
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)[2]			
1-hour Maximum Concentration (ppm)	0.066	0.059	0.070
Number of Days Standard Exceeded			
NAAQS 1-hour (>0.100 ppm)	0	0	0
CAAQS 1-hour (>0.18 ppm)	0	0	0
Particulate Matter Less Than 10 Microns (PM_{10})[1]			
National 24-hour Maximum Concentration	55.6	45.1	56.2
State 24-hour Maximum Concentration	55.6	44.2	55.1
State Annual Average Concentration (20 μg/m^3)	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)	1	0	2
Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$)[1]			
National 24-hour Maximum Concentration	38.9	20.8	44.8
State 24-hour Maximum Concentration	38.9	20.8	44.8
Number of Days Standard Exceeded			
NAAQS 24-hour (>35 μg/m^3)	1	0	2

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 Mission Viejo – 26081 Via Pera Monitoring Station, 26081 Via Pera, Mission Viejo, CA 92691 (CARB# 30002).
2. Measurements at Anaheim – Pampas Lane Monitoring Station, 1630 W. Pampas Lane, Anaheim, CA 92802 (CARB# 30178).

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
Gross Hall	Adjacent to the north
Hewitt Research Hall	Adjacent to the northwest
Multifamily Housing	572 feet to the northeast
Single Family Residences	2,445 feet to the southeast
Multifamily Housing	3,067 feet to the west
Newport Bluffs Apartment Homes	3,083 feet to the southwest
UCI Middle Earth Housing	3,514 feet to the northeast

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)	Pounds Per Day	
	Construction	Operations
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	Pounds Per Day			
	NO_X	CO	PM_{10}	$PM_{2.5}$
1 Acre	92/92	639/639	4/1	3/1
2 Acres	131/131	945/945	7/2	5/2
5 Acres	197/197	1,711/1,711	14/4	9/2

NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

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

4.2 Methodology

This air quality impact analysis considers construction and operational impacts associated with the Project. Where criteria air pollutant quantification was required, emissions were modeled using the California Emissions Estimator Model (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. Air quality impacts were assessed according to methodologies recommended by CARB and the SCAQMD.

Construction equipment, trucks, worker vehicles, and ground-disturbing activities associated with Project construction would generate emissions of criteria air pollutants and precursors. Daily regional construction emissions are estimated by assuming construction occurs at the earliest feasible date (i.e., a conservative estimate of construction activities) and applying off-road, fugitive dust, and on-road emissions factors in CalEEMod.

Project operations would result in emissions of area sources (consumer products), energy sources (natural gas usage), and mobile sources (motor vehicles from Project generated vehicle trips). Project-generated increases in operational emissions would be predominantly associated with motor vehicle use. The increase of traffic over existing conditions as a result of the Project was obtained from the Project's Trip Generation Analysis prepared by Stantec (December 2021). Other operational emissions from area, energy, and stationary sources were quantified in CalEEMod based on land use activity data.

As discussed above, the SCAQMD provides significance thresholds for emissions associated with proposed Project construction and operations. The proposed Project's construction and operational emissions are compared to the daily criteria pollutant emissions significance thresholds to determine the significance of a Project's impact on regional air quality.

The localized effects from the Project's on-site emissions were evaluated in accordance with the SCAQMD's LST methodology, which uses on-site mass emissions rate look-up tables and Project-specific modeling. 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 standards and are developed based on the ambient concentrations of that pollutant for each source receptor area and distance to the nearest sensitive receptor.

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 or a City of Irvine *General Plan* (IGP) amendment. Figure 5-2 of the LRDP shows the Project site as

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

designated as Academic and Support. The proposed Project is consistent with the primary uses allowed under Academic and Support land use category, which include classrooms, instructional and research laboratories, and other campus facilities. Compatible uses include food service, recreation, parking, utility infrastructure, and other 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.

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.

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 29 months. The Project would demolish the existing parking lot and is anticipated to require approximately 15,500 CY of excavation with 14,000 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

Construction Year	**Maximum Pounds Per Day**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2022	3.24	33.13	21.11	0.04	10.21	5.85
2023	2.72	27.57	20.46	0.05	9.86	5.54
2024	37.35	16.94	22.60	0.05	2.40	1.12
2025	38.17	24.46	37.23	0.07	2.88	1.46
SCAQMD Threshold	*75*	*100*	*550*	*150*	*55*	*150*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

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 stockpiles 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. Operational emissions attributable to the proposed Project are summarized in **Table 9: Operational Emissions**. The operational emissions sources are described in more detail below.

- Area Source Emissions. Area Source Emissions would be generated due to consumer products (e.g., fertilizers/pesticides, detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints, lab chemicals, etc.), architectural coatings, and gasoline-powered landscaping equipment that were previously not present on the site.

- 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.

- 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 551 average daily trips (ADT).

Table 9: Long-Term Operational Emissions

Source	Maximum Pounds Per Day					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Summer Emissions						
Area Source Emissions	5.60	<0.01	0.03	0	<0.01	<0.01
Energy Emissions	0.15	1.39	1.17	<0.01	0.11	0.11
Mobile Emissions	1.56	1.62	15.67	0.04	3.96	1.07
Total Emissions	7.32	3.02	16.87	0.04	4.06	1.18
SCAQMD Threshold	*55*	*55*	*550*	*150*	*150*	*55*
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**
Winter Emissions						
Area Source Emissions	5.60	<0.01	0.03	0	<0.01	<0.01
Energy Emissions	0.15	1.39	1.17	<0.1	0.11	0.11
Mobile Emissions	1.52	1.74	15.24	0.03	3.96	1.07
Total Emissions	7.28	3.14	16.44	0.04	4.06	1.18
SCAQMD Threshold	55	55	550	150	150	55
Exceeds Threshold?	**No**	**No**	**No**	**No**	**No**	**No**

ROG = Reactive Organic Gases; NO_X = Nitrogen Oxides; CO = Carbon Monoxide; SO_2 = Sulfur Dioxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less

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

Table 9 shows that the Project's unmitigated operational emissions would not exceed SCAQMD thresholds for any criteria air 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 emissions would result in a less than significant long-term regional air quality impact.

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. Therefore, 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.

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 UCI buildings and classrooms directly north and northwest of the construction area. There are also multifamily residences approximately 572 feet northeast. 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[4] for projects that disturb areas less than or equal to 5 acres. Project construction is anticipated to disturb a maximum of 2.5 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	1	0.5	8	0.5
	Scrapers	0	1.0	8	0
	Tractors/Loaders/Backhoes	3	0.5	8	1.5
Total Acres Graded per Day					**2.5**

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 UCI buildings and classrooms directly north and northwest of the construction areas well as the multifamily residences located approximately 572 feet (172 meters) northeast. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters (the SCAQMD recommends the 25-meter LSTs to be used for receptors located closer than 25 meters). Although the closest sensitive receptors are located 172 meters away, the 25-meter thresholds were used to provide a conservative analysis. **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 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.

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

Table 11: Localized Significance of Construction Emissions				
Construction Activity	**Maximum Pounds Per Day**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
Demolition (2022)	25.72	20.59	2.64	1.37
Site Preparation (2022)	33.08	19.70	10.02	5.80
Site Preparation (2023)	27.53	18.24	9.67	5.48
Grading (2023)	17.94	14.75	3.80	2.18
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 (2024)	1.22	1.81	0.06	0.06
Architectural Coating (2025)	1.15	1.81	0.05	0.05
SCAQMD Localized Screening Threshold (adjusted for 2.5 acres at 25 meters)	*142*	*1,087*	*8*	*6*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less				
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 building footprint is less than one acre, the 1-acre LST thresholds were used. 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				
Activity	**Maximum Pounds Per Day**			
	NO_X	**CO**	**PM_{10}**	**$PM_{2.5}$**
On-Site (Area and Energy Sources)	1.40	1.20	0.12	0.11
SCAQMD Localized Screening Threshold (1 acre at 25 meters)	*92*	*647*	*1*	*1*
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
NO_X = Nitrogen Oxides; CO = Carbon Monoxide; PM_{10} = Particulate Matter 10 microns in diameter or less; $PM_{2.5}$ = Particulate Matter 2.5 microns in diameter or less				
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 551 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 adjacent to the Project site and are 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.

Operational Toxic Air Contaminants

The proposed Project would include laboratory space that would involve the use of chemicals and may include Toxic Air Contaminants (TACs). Laboratory operations that use TACs would be performed in fume hoods to protect people in the laboratory from exposure to hazardous vapors. TAC emissions are first diluted in the fume hood, then the fume hood exhaust is emitted and disperses into the atmosphere. The dilution and dispersion from the fume hoods reduce pollutant concentrations and exposure. Adverse effects associated with pollutant exposure also decrease with distance.

Sensitive receptors located near the proposed project include residents located approximately 572 feet northeast of the Project site. Hewitt Research Hall and Gross Hall are located approximately 50 feet north of the project site; however, these buildings do not have outdoor areas of frequent human use where sensitive receptors could be exposed to TACs through inhalation for extended periods of time.

A quantitative Health Risk Assessment (HRA) was prepared as part of the 2007 LRDP EIR. The HRA estimated TAC emissions from laboratory operations, fuel combustion, and vehicular emissions based on existing emissions inventories and projected campus-wide growth. Air dispersion modeling and risk characterization was conducted to calculate both average and high-end risks for each receptor based on the predicted downwind concentration of TACs, the toxicity of each TAC, and the exposure scenario (residential, occupational, schoolchildren, etc.). Incremental cancer risks (i.e., cancer risks above background levels) and non-cancer hazards were calculated for over 2,600 receptors in the UCI campus vicinity.

Two types of health effects were evaluated in the HRA: cancer risk, which represents the potential for increased risk of cancer in a lifetime associated with exposure to emissions from the implementation of the UCI LRDP, and non-cancer hazards (both chronic and acute) which represent the potential for a non-cancer health effect due to exposure on either a chronic or short-term basis to emissions from the LRDP.

The HRA found incremental cancer risks to be below the SCAQMD significance level of 10 in one million for all receptors and all exposure scenarios. The population cancer burden, based on diesel particulate (the risk driving TAC) was calculated to be 0.0003612, which is well below the SCAQMD's acceptable cancer burden of 0.5. The emissions associated with implementation of the UCI LRDP was therefore found not to pose a significant incremental cancer risk to the surrounding populations. Additionally, the LRDP EIR analysis determined that chronic non-cancer hazards and acute hazards would be below the significance threshold of 1.0 for all receptors. The emissions associated with implementation of the UCI LRDP would therefore not pose a chronic or acute hazard to the surrounding populations.

The HRA within the LRDP EIR analyzed a 140 percent increase in building square footage (the analysis used a baseline of 3,103,000 gross square feet of existing engineering and science building space) at UCI and assumed a comparable increase in percentage of chemical uses would occur. The HRA analyzed a total of 7,440,000 gross square feet of engineering and science buildings for the LRDP. The proposed Project is within the building square footage assumed in the HRA and would not result in additional impacts beyond what was originally identified in the LRDP EIR.

The HRA included a refined dispersion modeling assessment to estimate project-related pollutant concentrations from on-campus sources. Air dispersion modeling is dependent on the emissions of TACs, the location of sources, and the site-specific meteorology of the impacted area. The dispersion modeling calculated one-hour and annual downwind concentrations to provide an estimate of the amount of TACs to which receptors would be exposed due to operations on the UCI campus. Evaluated land uses in the surrounding area include residential and commercial areas in the immediate vicinity of UCI, student housing on campus, and faculty housing on campus. A receptor grid was set up in the on-campus housing areas to address on-site impacts. In addition, a 100-meter grid was set up to evaluate off-site risks. As noted above, incremental cancer risks (i.e., cancer risks above background levels) and non-cancer hazards were calculated for over 2,600 receptors in the UCI campus vicinity.

The HRA identified the point of maximum impact, the maximally impacted residential receptor, and the maximally impacted occupational receptor. Separate exposure scenarios were evaluated for both on- and off-site residential, occupational, student, and child receptors. The HRA determined that emissions associated with implementation of the UCI LRDP would not pose a significant incremental cancer risk to the surrounding populations. Chronic and acute non-cancer hazards were also found to be less than significant.

The HRA was designed to present an upper-bound calculation of risks to individual receptors on and in the vicinity of the UCI campus. Uncertainties in the emission estimates, dispersion modeling, exposure assessment, and toxicity assessment are designed to provide health-protective estimates of human health risks. Actual risks are likely to be lower than the upper-bound risks presented in the HRA. The findings of the HRA uncertainty evaluation add confidence to the conclusions that the potential incremental cancer risks as well as chronic and acute non-cancer hazards will not exceed significance thresholds.

It should be noted that since completion of the HRA, the California Office of Environmental Health Hazard Assessment (OEHHA) has updated their guidance for health risk assessments to include age sensitivity factors, updated breathing rates, a factor for the fraction of time spent at home, and reduced exposure periods. Methods used in the HRA are conservative in that the methodology is more likely to overestimate than underestimate potential human health impacts. For example, exposed individuals are assumed to live or work at locations where TAC concentrations are predicted to be highest and are also assumed to be present at these locations for 24 hours per day, 7 days per week, for 70 years (residential exposure), and for 8 hours per day, 5 days per week, for 46 years (occupational exposure). Employing these assumptions results in conservative estimates of the amount of TACs these individuals might inhale, and in conservative estimates of the potential individual health risks. The OEHHA updated breathing rates would represent an increase in risk values. However, the fraction of time at home factor and the reduced exposure period would represent a decrease in the risk values. As such, the updated OEHHA guidance does not invalidate the conservative values in the HRA.

The proposed project would also be required to comply with various State and University regulations to ensure that impacts associated with the laboratory would not occur. Laboratory fume hoods operated on the UCI campus are required to comply with Title 8 of the California Code of Regulations, which contains California Occupational Safety and Health Administration (OSHA) requirements for these emission sources. The regulations are concerned with worker health and safety, requiring a minimum flow of speed, face velocity, and certain design features to protect laboratory personnel in their work. In addition, the code establishes specific requirements for the use and storage of carcinogens, including a requirement to scrub or filter air emissions from areas where carcinogens are used. Other than the requirement that the top of the fume hood stack must be located at least 7 feet above the roof, the regulations do not address emissions once the exhausted air mixes with outdoor air. Additionally, UCI Environmental Health & Safety and Risk Services provides an air quality program that assists the campus in air pollution prevention and provides compliance assistance on SCAQMD and other Clean Air Act laws and regulations. Therefore, TAC impacts associated with the proposed Project would be less than significant.

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.

Mitigation Measures: No mitigation is required.

Level of Significance: No impact.

6 REFERENCES

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3. California Air Resources Board, *Aerometric Data Analysis and Measurement System (ADAM) Top Four Summaries from 2018 to 2020*, 2021.
4. California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, 2005.
5. California Air Resources Board, *Current Air Quality Standards*, 2016.
6. California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, 2000.
7. City of Irvine, *General Plan*, 2015.
8. Office of Environmental Health Hazard Assessment, *Air Toxics Hot Spots Program Risk Assessment Guidelines*, 2015.
9. South Coast Air Quality Management District, *Air Quality Management Plan,* 2016.
10. South Coast Air Quality Management District, *CEQA Air Quality Handbook*, 1993.
11. South Coast Air Quality Management District, *Localized Significance Threshold Methodology*, 2009.
12. Stantec, *Falling Leaves Medical Building Project Trip Generation Summary,* December 2021.
13. University of California, Irvine, *Long Range Development Plan*, 2007.
14. University of California, Irvine, *Strategic Plan*, 2016.
15. United States Environmental Protection Agency, *National Ambient Air Quality Standards Table*, 2016.
16. United States Environmental Protection Agency, *Nonattainment Areas for Criteria Pollutants*, 2018.
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Appendix A

Air Quality Modeling Data

UCI Fallen Leaves

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.63	Acre	0.63	27,442.80	0
City Park	0.94	Acre	0.94	40,946.40	0
Research & Development	250.00	1000sqft	5.74	250,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2025
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 -

Construction Phase - Construction from oct 2022 to march 2025

Grading -

Demolition -

Vehicle Trips - Calcuated using the trip gen

Construction Off-road Equipment Mitigation - SQAMD rules

Water Mitigation -

Waste Mitigation -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	35.00
tblConstructionPhase	NumDays	10.00	40.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	230.00	465.00
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	PhaseEndDate	10/28/2022	11/18/2022
tblConstructionPhase	PhaseEndDate	11/11/2022	1/13/2023
tblConstructionPhase	PhaseEndDate	12/9/2022	4/7/2023
tblConstructionPhase	PhaseEndDate	10/27/2023	1/17/2025
tblConstructionPhase	PhaseEndDate	11/24/2023	2/4/2025
tblConstructionPhase	PhaseEndDate	12/22/2023	3/7/2025
tblConstructionPhase	PhaseStartDate	10/29/2022	11/21/2022
tblConstructionPhase	PhaseStartDate	11/12/2022	1/16/2023
tblConstructionPhase	PhaseStartDate	12/10/2022	4/10/2023
tblConstructionPhase	PhaseStartDate	10/28/2023	1/8/2025
tblConstructionPhase	PhaseStartDate	11/25/2023	12/6/2024
tblGrading	MaterialExported	0.00	14,500.00
tblGrading	MaterialImported	0.00	1,000.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PR_TP	66.00	0.00
tblVehicleTrips	ST_TR	1.96	0.00

tblVehicleTrips	ST_TR	1.90	2.21
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	1.11	2.21
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	11.26	2.21

2.0 Emissions Summary

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	3.2315	33.1269	21.1624	0.0403	19.8582	1.6138	21.4720	10.1558	1.4847	11.6405	0.0000	3,899.9529	3,899.9529	1.1970	4.3900e-003	3,927.4537
2023	2.7164	27.5625	20.7749	0.0471	19.8582	1.2672	21.1254	10.1558	1.1658	11.3216	0.0000	4,654.6209	4,654.6209	1.1969	0.1728	4,722.9138
2024	37.3227	16.8229	22.9474	0.0517	1.7972	0.6927	2.4899	0.4842	0.6552	1.1394	0.0000	5,101.5435	5,101.5435	0.6865	0.1739	5,170.5159
2025	38.1393	24.3490	37.5944	0.0753	1.9648	1.0166	2.9814	0.5287	0.9507	1.4793	0.0000	7,387.1347	7,387.1347	1.3966	0.1726	7,473.4798
Maximum	**38.1393**	**33.1269**	**37.5944**	**0.0753**	**19.8582**	**1.6138**	**21.4720**	**10.1558**	**1.4847**	**11.6405**	**0.0000**	**7,387.1347**	**7,387.1347**	**1.3966**	**0.1739**	**7,473.4798**

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	3.2315	33.1269	21.1624	0.0403	8.5941	1.6138	10.2079	4.3696	1.4847	5.8543	0.0000	3,899.9529	3,899.9529	1.1970	4.3900e-003	3,927.4537
2023	2.7164	27.5625	20.7749	0.0471	8.5941	1.2672	9.8612	4.3696	1.1658	5.5354	0.0000	4,654.6209	4,654.6209	1.1969	0.1728	4,722.9138
2024	37.3227	16.8229	22.9474	0.0517	1.7066	0.6927	2.3993	0.4619	0.6552	1.1171	0.0000	5,101.5435	5,101.5435	0.6865	0.1739	5,170.5159
2025	38.1393	24.3490	37.5944	0.0753	1.8655	1.0166	2.8821	0.5043	0.9507	1.4549	0.0000	7,387.1347	7,387.1347	1.3966	0.1726	7,473.4798
Maximum	**38.1393**	**33.1269**	**37.5944**	**0.0753**	**8.5941**	**1.6138**	**10.2079**	**4.3696**	**1.4847**	**5.8543**	**0.0000**	**7,387.1347**	**7,387.1347**	**1.3966**	**0.1739**	**7,473.4798**

	ROG	**NOx**	**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**	**52.25**	**0.00**	**47.26**	**54.49**	**0.00**	**45.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Energy	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Mobile	1.5645	1.6231	15.6708	0.0362	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,689.1700	3,689.1700	0.2257	0.1497	3,739.4212
Total	**7.3190**	**3.0174**	**16.8674**	**0.0446**	**3.9329**	**0.1313**	**4.0643**	**1.0480**	**0.1296**	**1.1776**		**5,362.0696**	**5,362.0696**	**0.2579**	**0.1804**	**5,422.2652**

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	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Energy	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Mobile	1.5645	1.6231	15.6708	0.0362	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,689.1700	3,689.1700	0.2257	0.1497	3,739.4212
Total	**7.3190**	**3.0174**	**16.8674**	**0.0446**	**3.9329**	**0.1313**	**4.0643**	**1.0480**	**0.1296**	**1.1776**		**5,362.0696**	**5,362.0696**	**0.2579**	**0.1804**	**5,422.2652**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	10/3/2022	11/18/2022	5	35	
2	Site Preparation	Site Preparation	11/21/2022	1/13/2023	5	40	
3	Grading	Grading	1/16/2023	4/7/2023	5	60	
4	Building Construction	Building Construction	4/10/2023	1/17/2025	5	465	
5	Paving	Paving	1/8/2025	2/4/2025	5	20	
6	Architectural Coating	Architectural Coating	12/6/2024	3/7/2025	5	66	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 60

Acres of Paving: 0.63

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 375,000; Non-Residential Outdoor: 125,000; Striped Parking Area: 1,647 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
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
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	109.00	52.00	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	22.00	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

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					3.2734	0.0000	3.2734	0.4956	0.0000	0.4956			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**3.2734**	**1.2427**	**4.5161**	**0.4956**	**1.1553**	**1.6509**		**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

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	0.0000	0.0000	0.0000	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	0.0512	0.0361	0.5683	1.5200e-003	0.1677	1.0000e-003	0.1687	0.0445	9.2000e-004	0.0454		153.1717	153.1717	4.0100e-003	3.6600e-003	154.3616
Total	**0.0512**	**0.0361**	**0.5683**	**1.5200e-003**	**0.1677**	**1.0000e-003**	**0.1687**	**0.0445**	**9.2000e-004**	**0.0454**		**153.1717**	**153.1717**	**4.0100e-003**	**3.6600e-003**	**154.3616**

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					1.3994	0.0000	1.3994	0.2119	0.0000	0.2119			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**1.3994**	**1.2427**	**2.6420**	**0.2119**	**1.1553**	**1.3671**	**0.0000**	**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

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	0.0000	0.0000	0.0000	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	0.0512	0.0361	0.5683	1.5200e-003	0.1589	1.0000e-003	0.1599	0.0423	9.2000e-004	0.0432		153.1717	153.1717	4.0100e-003	3.6600e-003	154.3616
Total	**0.0512**	**0.0361**	**0.5683**	**1.5200e-003**	**0.1589**	**1.0000e-003**	**0.1599**	**0.0423**	**9.2000e-004**	**0.0432**		**153.1717**	**153.1717**	**4.0100e-003**	**3.6600e-003**	**154.3616**

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**

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	0.0614	0.0434	0.6820	1.8200e-003	0.2012	1.2000e-003	0.2024	0.0534	1.1100e-003	0.0545		183.8060	183.8060	4.8100e-003	4.3900e-003	185.2340
Total	**0.0614**	**0.0434**	**0.6820**	**1.8200e-003**	**0.2012**	**1.2000e-003**	**0.2024**	**0.0534**	**1.1100e-003**	**0.0545**		**183.8060**	**183.8060**	**4.8100e-003**	**4.3900e-003**	**185.2340**

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			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**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	0.0614	0.0434	0.6820	1.8200e-003	0.1907	1.2000e-003	0.1919	0.0508	1.1100e-003	0.0519		183.8060	183.8060	4.8100e-003	4.3900e-003	185.2340
Total	**0.0614**	**0.0434**	**0.6820**	**1.8200e-003**	**0.1907**	**1.2000e-003**	**0.1919**	**0.0508**	**1.1100e-003**	**0.0519**		**183.8060**	**183.8060**	**4.8100e-003**	**4.3900e-003**	**185.2340**

3.3 Site Preparation - 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					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	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	0.0569	0.0384	0.6276	1.7600e-003	0.2012	1.1300e-003	0.2023	0.0534	1.0400e-003	0.0544		177.8853	177.8853	4.3200e-003	4.0500e-003	179.2014
Total	**0.0569**	**0.0384**	**0.6276**	**1.7600e-003**	**0.2012**	**1.1300e-003**	**0.2023**	**0.0534**	**1.0400e-003**	**0.0544**		**177.8853**	**177.8853**	**4.3200e-003**	**4.0500e-003**	**179.2014**

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**8.4034**	**1.2660**	**9.6694**	**4.3188**	**1.1647**	**5.4835**	**0.0000**	**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	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	0.0569	0.0384	0.6276	1.7600e-003	0.1907	1.1300e-003	0.1918	0.0508	1.0400e-003	0.0518		177.8853	177.8853	4.3200e-003	4.0500e-003	179.2014
Total	**0.0569**	**0.0384**	**0.6276**	**1.7600e-003**	**0.1907**	**1.1300e-003**	**0.1918**	**0.0508**	**1.0400e-003**	**0.0518**		**177.8853**	**177.8853**	**4.3200e-003**	**4.0500e-003**	**179.2014**

3.4 Grading - 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					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.0826**	**0.7749**	**7.8575**	**3.4247**	**0.7129**	**4.1377**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

3.4 Grading - 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	0.0000	0.0000	0.0000	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	0.0474	0.0320	0.5230	1.4700e-003	0.1677	9.4000e-004	0.1686	0.0445	8.7000e-004	0.0453		148.2377	148.2377	3.6000e-003	3.3800e-003	149.3345
Total	**0.0474**	**0.0320**	**0.5230**	**1.4700e-003**	**0.1677**	**9.4000e-004**	**0.1686**	**0.0445**	**8.7000e-004**	**0.0453**		**148.2377**	**148.2377**	**3.6000e-003**	**3.3800e-003**	**149.3345**

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**3.0278**	**0.7749**	**3.8027**	**1.4641**	**0.7129**	**2.1770**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

3.4 Grading - 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	0.0000	0.0000	0.0000	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	0.0474	0.0320	0.5230	1.4700e-003	0.1589	9.4000e-004	0.1599	0.0423	8.7000e-004	0.0432		148.2377	148.2377	3.6000e-003	3.3800e-003	149.3345
Total	**0.0474**	**0.0320**	**0.5230**	**1.4700e-003**	**0.1589**	**9.4000e-004**	**0.1599**	**0.0423**	**8.7000e-004**	**0.0432**		**148.2377**	**148.2377**	**3.6000e-003**	**3.3800e-003**	**149.3345**

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**

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	0.0558	1.9029	0.7303	9.4700e-003	0.3329	0.0105	0.3434	0.0958	0.0101	0.1059		1,022.2168	1,022.2168	0.0378	0.1483	1,067.3437
Worker	0.3448	0.2322	3.8006	0.0107	1.2184	6.8700e-003	1.2252	0.3231	6.3200e-003	0.3294		1,077.1942	1,077.1942	0.0261	0.0246	1,085.1641
Total	**0.4005**	**2.1351**	**4.5309**	**0.0201**	**1.5513**	**0.0174**	**1.5687**	**0.4190**	**0.0164**	**0.4353**		**2,099.4110**	**2,099.4110**	**0.0640**	**0.1728**	**2,152.5077**

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**

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	0.0558	1.9029	0.7303	9.4700e-003	0.3187	0.0105	0.3292	0.0924	0.0101	0.1024		1,022.2168	1,022.2168	0.0378	0.1483	1,067.3437
Worker	0.3448	0.2322	3.8006	0.0107	1.1548	6.8700e-003	1.1617	0.3075	6.3200e-003	0.3138		1,077.1942	1,077.1942	0.0261	0.0246	1,085.1641
Total	**0.4005**	**2.1351**	**4.5309**	**0.0201**	**1.4735**	**0.0174**	**1.4909**	**0.3999**	**0.0164**	**0.4163**		**2,099.4110**	**2,099.4110**	**0.0640**	**0.1728**	**2,152.5077**

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**

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	0.0544	1.9110	0.7184	9.3200e-003	0.3329	0.0106	0.3435	0.0958	0.0101	0.1060		1,007.6710	1,007.6710	0.0378	0.1464	1,052.2408
Worker	0.3217	0.2075	3.5380	0.0104	1.2184	6.5700e-003	1.2249	0.3231	6.0400e-003	0.3292		1,045.6725	1,045.6725	0.0237	0.0229	1,053.0757
Total	**0.3761**	**2.1184**	**4.2564**	**0.0197**	**1.5513**	**0.0171**	**1.5684**	**0.4190**	**0.0162**	**0.4351**		**2,053.3434**	**2,053.3434**	**0.0615**	**0.1693**	**2,105.3166**

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**

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	0.0544	1.9110	0.7184	9.3200e-003	0.3187	0.0106	0.3293	0.0924	0.0101	0.1025		1,007.6710	1,007.6710	0.0378	0.1464	1,052.2408
Worker	0.3217	0.2075	3.5380	0.0104	1.1548	6.5700e-003	1.1614	0.3075	6.0400e-003	0.3136		1,045.6725	1,045.6725	0.0237	0.0229	1,053.0757
Total	**0.3761**	**2.1184**	**4.2564**	**0.0197**	**1.4735**	**0.0171**	**1.4906**	**0.3999**	**0.0162**	**0.4160**		**2,053.3434**	**2,053.3434**	**0.0615**	**0.1693**	**2,105.3166**

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**

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	0.0531	1.9024	0.7078	9.1500e-003	0.3329	0.0106	0.3435	0.0958	0.0102	0.1060		989.5701	989.5701	0.0379	0.1440	1,033.4173
Worker	0.3012	0.1865	3.2960	9.9900e-003	1.2184	6.2500e-003	1.2246	0.3231	5.7500e-003	0.3289		1,010.0396	1,010.0396	0.0214	0.0214	1,016.9437
Total	**0.3544**	**2.0889**	**4.0038**	**0.0191**	**1.5513**	**0.0169**	**1.5681**	**0.4190**	**0.0159**	**0.4349**		**1,999.6097**	**1,999.6097**	**0.0593**	**0.1653**	**2,050.3610**

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**

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	0.0531	1.9024	0.7078	9.1500e-003	0.3187	0.0106	0.3293	0.0924	0.0102	0.1025		989.5701	989.5701	0.0379	0.1440	1,033.4173
Worker	0.3012	0.1865	3.2960	9.9900e-003	1.1548	6.2500e-003	1.1611	0.3075	5.7500e-003	0.3133		1,010.0396	1,010.0396	0.0214	0.0214	1,016.9437
Total	**0.3544**	**2.0889**	**4.0038**	**0.0191**	**1.4735**	**0.0169**	**1.4904**	**0.3999**	**0.0159**	**0.4158**		**1,999.6097**	**1,999.6097**	**0.0593**	**0.1653**	**2,050.3610**

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

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	0.0415	0.0257	0.4536	1.3800e-003	0.1677	8.6000e-004	0.1685	0.0445	7.9000e-004	0.0453		138.9963	138.9963	2.9400e-003	2.9400e-003	139.9464
Total	**0.0415**	**0.0257**	**0.4536**	**1.3800e-003**	**0.1677**	**8.6000e-004**	**0.1685**	**0.0445**	**7.9000e-004**	**0.0453**		**138.9963**	**138.9963**	**2.9400e-003**	**2.9400e-003**	**139.9464**

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

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	0.0415	0.0257	0.4536	1.3800e-003	0.1589	8.6000e-004	0.1598	0.0423	7.9000e-004	0.0431		138.9963	138.9963	2.9400e-003	2.9400e-003	139.9464
Total	**0.0415**	**0.0257**	**0.4536**	**1.3800e-003**	**0.1589**	**8.6000e-004**	**0.1598**	**0.0423**	**7.9000e-004**	**0.0431**		**138.9963**	**138.9963**	**2.9400e-003**	**2.9400e-003**	**139.9464**

3.7 Architectural Coating - 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					
Archit. Coating	35.2293					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**35.4101**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.0000	0.0000	0.0000	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	0.0649	0.0419	0.7141	2.0900e-003	0.2459	1.3300e-003	0.2472	0.0652	1.2200e-003	0.0664		211.0532	211.0532	4.7800e-003	4.6100e-003	212.5474
Total	**0.0649**	**0.0419**	**0.7141**	**2.0900e-003**	**0.2459**	**1.3300e-003**	**0.2472**	**0.0652**	**1.2200e-003**	**0.0664**		**211.0532**	**211.0532**	**4.7800e-003**	**4.6100e-003**	**212.5474**

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	35.2293					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**35.4101**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.0000	0.0000	0.0000	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	0.0649	0.0419	0.7141	2.0900e-003	0.2331	1.3300e-003	0.2344	0.0621	1.2200e-003	0.0633		211.0532	211.0532	4.7800e-003	4.6100e-003	212.5474
Total	**0.0649**	**0.0419**	**0.7141**	**2.0900e-003**	**0.2331**	**1.3300e-003**	**0.2344**	**0.0621**	**1.2200e-003**	**0.0633**		**211.0532**	**211.0532**	**4.7800e-003**	**4.6100e-003**	**212.5474**

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	35.2293					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	**35.4002**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

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	0.0608	0.0376	0.6653	2.0200e-003	0.2459	1.2600e-003	0.2472	0.0652	1.1600e-003	0.0664		203.8612	203.8612	4.3100e-003	4.3100e-003	205.2547
Total	**0.0608**	**0.0376**	**0.6653**	**2.0200e-003**	**0.2459**	**1.2600e-003**	**0.2472**	**0.0652**	**1.1600e-003**	**0.0664**		**203.8612**	**203.8612**	**4.3100e-003**	**4.3100e-003**	**205.2547**

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	35.2293					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	**35.4002**	**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	0.0608	0.0376	0.6653	2.0200e-003	0.2331	1.2600e-003	0.2343	0.0621	1.1600e-003	0.0632		203.8612	203.8612	4.3100e-003	4.3100e-003	205.2547
Total	**0.0608**	**0.0376**	**0.6653**	**2.0200e-003**	**0.2331**	**1.2600e-003**	**0.2343**	**0.0621**	**1.1600e-003**	**0.0632**		**203.8612**	**203.8612**	**4.3100e-003**	**4.3100e-003**	**205.2547**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	1.5645	1.6231	15.6708	0.0362	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,689.170 0	3,689.170 0	0.2257	0.1497	3,739.421 2
Unmitigated	1.5645	1.6231	15.6708	0.0362	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,689.170 0	3,689.170 0	0.2257	0.1497	3,739.421 2

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		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Research & Development	552.50	552.50	552.50	1,866,705	1,866,705
Total	552.50	552.50	552.50	1,866,705	1,866,705

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	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Research & Development	16.60	8.40	6.90	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644
Other Non-Asphalt Surfaces	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Research & Development	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644

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	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
NaturalGas Unmitigated	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	14219.2	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Total		**0.1533**	**1.3940**	**1.1710**	**8.3600e-003**		**0.1060**	**0.1060**		**0.1060**	**0.1060**		**1,672.8445**	**1,672.8445**	**0.0321**	**0.0307**	**1,682.7854**

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	14.2192	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Total		**0.1533**	**1.3940**	**1.1710**	**8.3600e-003**		**0.1060**	**0.1060**		**0.1060**	**0.1060**		**1,672.8445**	**1,672.8445**	**0.0321**	**0.0307**	**1,682.7854**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	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	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Unmitigated	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.6370					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.9618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.3600e-003	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Total	**5.6012**	**2.3000e-004**	**0.0256**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0551**	**0.0551**	**1.4000e-004**		**0.0586**

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	0.6370					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.9618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.3600e-003	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Total	**5.6012**	**2.3000e-004**	**0.0256**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0551**	**0.0551**	**1.4000e-004**		**0.0586**

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

UCI Fallen Leaves

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.63	Acre	0.63	27,442.80	0
City Park	0.94	Acre	0.94	40,946.40	0
Research & Development	250.00	1000sqft	5.74	250,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2025
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 -

Construction Phase - Construction from oct 2022 to march 2025

Grading -

Demolition -

Vehicle Trips - Calcuated using the trip gen

Construction Off-road Equipment Mitigation - SQAMD rules

Water Mitigation -

Waste Mitigation -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	35.00
tblConstructionPhase	NumDays	10.00	40.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	230.00	465.00
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	PhaseEndDate	10/28/2022	11/18/2022
tblConstructionPhase	PhaseEndDate	11/11/2022	1/13/2023
tblConstructionPhase	PhaseEndDate	12/9/2022	4/7/2023
tblConstructionPhase	PhaseEndDate	10/27/2023	1/17/2025
tblConstructionPhase	PhaseEndDate	11/24/2023	2/4/2025
tblConstructionPhase	PhaseEndDate	12/22/2023	3/7/2025
tblConstructionPhase	PhaseStartDate	10/29/2022	11/21/2022
tblConstructionPhase	PhaseStartDate	11/12/2022	1/16/2023
tblConstructionPhase	PhaseStartDate	12/10/2022	4/10/2023
tblConstructionPhase	PhaseStartDate	10/28/2023	1/8/2025
tblConstructionPhase	PhaseStartDate	11/25/2023	12/6/2024
tblGrading	MaterialExported	0.00	14,500.00
tblGrading	MaterialImported	0.00	1,000.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PR_TP	66.00	0.00
tblVehicleTrips	ST_TR	1.96	0.00

tblVehicleTrips	ST_TR	1.90	2.21
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	1.11	2.21
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	11.26	2.21

2.0 Emissions Summary

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	3.2353	33.1311	21.1115	0.0403	19.8582	1.6138	21.4720	10.1558	1.4847	11.6405	0.0000	3,891.3981	3,891.3981	1.1970	4.6700e-003	3,918.9691
2023	2.7201	27.5662	20.4620	0.0465	19.8582	1.2672	21.1254	10.1558	1.1658	11.3216	0.0000	4,596.2902	4,596.2902	1.1969	0.1747	4,665.1586
2024	37.3469	16.9372	22.5965	0.0510	1.7972	0.6927	2.4899	0.4842	0.6552	1.1394	0.0000	5,033.2796	5,033.2796	0.6868	0.1759	5,102.8778
2025	38.1659	24.4630	37.2317	0.0745	1.9648	1.0166	2.9815	0.5287	0.9507	1.4794	0.0000	7,313.6323	7,313.6323	1.3969	0.1747	7,400.6207
Maximum	**38.1659**	**33.1311**	**37.2317**	**0.0745**	**19.8582**	**1.6138**	**21.4720**	**10.1558**	**1.4847**	**11.6405**	**0.0000**	**7,313.6323**	**7,313.6323**	**1.3969**	**0.1759**	**7,400.6207**

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	3.2353	33.1311	21.1115	0.0403	8.5941	1.6138	10.2079	4.3696	1.4847	5.8543	0.0000	3,891.3981	3,891.3981	1.1970	4.6700e-003	3,918.9691
2023	2.7201	27.5662	20.4620	0.0465	8.5941	1.2672	9.8612	4.3696	1.1658	5.5354	0.0000	4,596.2902	4,596.2902	1.1969	0.1747	4,665.1586
2024	37.3469	16.9372	22.5965	0.0510	1.7066	0.6927	2.3993	0.4619	0.6552	1.1172	0.0000	5,033.2796	5,033.2796	0.6868	0.1759	5,102.8778
2025	38.1659	24.4630	37.2317	0.0745	1.8655	1.0166	2.8821	0.5043	0.9507	1.4550	0.0000	7,313.6323	7,313.6323	1.3969	0.1747	7,400.6207
Maximum	**38.1659**	**33.1311**	**37.2317**	**0.0745**	**8.5941**	**1.6138**	**10.2079**	**4.3696**	**1.4847**	**5.8543**	**0.0000**	**7,313.6323**	**7,313.6323**	**1.3969**	**0.1759**	**7,400.6207**

	ROG	**NOx**	**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**	**52.25**	**0.00**	**47.26**	**54.49**	**0.00**	**45.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Energy	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Mobile	1.5216	1.7435	15.2401	0.0346	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,525.9651	3,525.9651	0.2319	0.1556	3,578.1259
Total	**7.2762**	**3.1378**	**16.4367**	**0.0429**	**3.9329**	**0.1313**	**4.0643**	**1.0480**	**0.1296**	**1.1776**		**5,198.8647**	**5,198.8647**	**0.2641**	**0.1863**	**5,260.9699**

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	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Energy	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Mobile	1.5216	1.7435	15.2401	0.0346	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,525.9651	3,525.9651	0.2319	0.1556	3,578.1259
Total	**7.2762**	**3.1378**	**16.4367**	**0.0429**	**3.9329**	**0.1313**	**4.0643**	**1.0480**	**0.1296**	**1.1776**		**5,198.8647**	**5,198.8647**	**0.2641**	**0.1863**	**5,260.9699**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	10/3/2022	11/18/2022	5	35	
2	Site Preparation	Site Preparation	11/21/2022	1/13/2023	5	40	
3	Grading	Grading	1/16/2023	4/7/2023	5	60	
4	Building Construction	Building Construction	4/10/2023	1/17/2025	5	465	
5	Paving	Paving	1/8/2025	2/4/2025	5	20	
6	Architectural Coating	Architectural Coating	12/6/2024	3/7/2025	5	66	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 60

Acres of Paving: 0.63

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 375,000; Non-Residential Outdoor: 125,000; Striped Parking Area: 1,647 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
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
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	109.00	52.00	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	22.00	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

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					3.2734	0.0000	3.2734	0.4956	0.0000	0.4956			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**3.2734**	**1.2427**	**4.5161**	**0.4956**	**1.1553**	**1.6509**		**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

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	0.0000	0.0000	0.0000	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	0.0543	0.0396	0.5175	1.4300e-003	0.1677	1.0000e-003	0.1687	0.0445	9.2000e-004	0.0454		144.6169	144.6169	4.0600e-003	3.8900e-003	145.8771
Total	**0.0543**	**0.0396**	**0.5175**	**1.4300e-003**	**0.1677**	**1.0000e-003**	**0.1687**	**0.0445**	**9.2000e-004**	**0.0454**		**144.6169**	**144.6169**	**4.0600e-003**	**3.8900e-003**	**145.8771**

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					1.3994	0.0000	1.3994	0.2119	0.0000	0.2119			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.781 2	3,746.781 2	1.0524		3,773.092 0
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**1.3994**	**1.2427**	**2.6420**	**0.2119**	**1.1553**	**1.3671**	**0.0000**	**3,746.781 2**	**3,746.781 2**	**1.0524**		**3,773.092 0**

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	0.0000	0.0000	0.0000	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	0.0543	0.0396	0.5175	1.4300e-003	0.1589	1.0000e-003	0.1599	0.0423	9.2000e-004	0.0432		144.6169	144.6169	4.0600e-003	3.8900e-003	145.8771
Total	**0.0543**	**0.0396**	**0.5175**	**1.4300e-003**	**0.1589**	**1.0000e-003**	**0.1599**	**0.0423**	**9.2000e-004**	**0.0432**		**144.6169**	**144.6169**	**4.0600e-003**	**3.8900e-003**	**145.8771**

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**

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	0.0652	0.0476	0.6210	1.7200e-003	0.2012	1.2000e-003	0.2024	0.0534	1.1100e-003	0.0545		173.5403	173.5403	4.8700e-003	4.6700e-003	175.0525
Total	**0.0652**	**0.0476**	**0.6210**	**1.7200e-003**	**0.2012**	**1.2000e-003**	**0.2024**	**0.0534**	**1.1100e-003**	**0.0545**		**173.5403**	**173.5403**	**4.8700e-003**	**4.6700e-003**	**175.0525**

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			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**	**8.4034**	**1.6126**	**10.0159**	**4.3188**	**1.4836**	**5.8024**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

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	0.0652	0.0476	0.6210	1.7200e-003	0.1907	1.2000e-003	0.1919	0.0508	1.1100e-003	0.0519		173.5403	173.5403	4.8700e-003	4.6700e-003	175.0525
Total	**0.0652**	**0.0476**	**0.6210**	**1.7200e-003**	**0.1907**	**1.2000e-003**	**0.1919**	**0.0508**	**1.1100e-003**	**0.0519**		**173.5403**	**173.5403**	**4.8700e-003**	**4.6700e-003**	**175.0525**

3.3 Site Preparation - 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					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647		3,687.3081	3,687.3081	1.1926		3,717.1219
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**19.6570**	**1.2660**	**20.9230**	**10.1025**	**1.1647**	**11.2672**		**3,687.3081**	**3,687.3081**	**1.1926**		**3,717.1219**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	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	0.0606	0.0421	0.5721	1.6600e-003	0.2012	1.1300e-003	0.2023	0.0534	1.0400e-003	0.0544		167.9721	167.9721	4.3800e-003	4.3100e-003	169.3658
Total	**0.0606**	**0.0421**	**0.5721**	**1.6600e-003**	**0.2012**	**1.1300e-003**	**0.2023**	**0.0534**	**1.0400e-003**	**0.0544**		**167.9721**	**167.9721**	**4.3800e-003**	**4.3100e-003**	**169.3658**

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					8.4034	0.0000	8.4034	4.3188	0.0000	4.3188			0.0000			0.0000
Off-Road	2.6595	27.5242	18.2443	0.0381		1.2660	1.2660		1.1647	1.1647	0.0000	3,687.308 1	3,687.308 1	1.1926		3,717.121 9
Total	**2.6595**	**27.5242**	**18.2443**	**0.0381**	**8.4034**	**1.2660**	**9.6694**	**4.3188**	**1.1647**	**5.4835**	**0.0000**	**3,687.308 1**	**3,687.308 1**	**1.1926**		**3,717.121 9**

3.3 Site Preparation - 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	0.0000	0.0000	0.0000	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	0.0606	0.0421	0.5721	1.6600e-003	0.1907	1.1300e-003	0.1918	0.0508	1.0400e-003	0.0518		167.9721	167.9721	4.3800e-003	4.3100e-003	169.3658
Total	**0.0606**	**0.0421**	**0.5721**	**1.6600e-003**	**0.1907**	**1.1300e-003**	**0.1918**	**0.0508**	**1.0400e-003**	**0.0518**		**167.9721**	**167.9721**	**4.3800e-003**	**4.3100e-003**	**169.3658**

3.4 Grading - 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					
Fugitive Dust					7.0826	0.0000	7.0826	3.4247	0.0000	3.4247			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129		2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**7.0826**	**0.7749**	**7.8575**	**3.4247**	**0.7129**	**4.1377**		**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

3.4 Grading - 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	0.0000	0.0000	0.0000	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	0.0505	0.0351	0.4768	1.3800e-003	0.1677	9.4000e-004	0.1686	0.0445	8.7000e-004	0.0453		139.9767	139.9767	3.6500e-003	3.5900e-003	141.1381
Total	**0.0505**	**0.0351**	**0.4768**	**1.3800e-003**	**0.1677**	**9.4000e-004**	**0.1686**	**0.0445**	**8.7000e-004**	**0.0453**		**139.9767**	**139.9767**	**3.6500e-003**	**3.5900e-003**	**141.1381**

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					3.0278	0.0000	3.0278	1.4641	0.0000	1.4641			0.0000			0.0000
Off-Road	1.7109	17.9359	14.7507	0.0297		0.7749	0.7749		0.7129	0.7129	0.0000	2,872.6910	2,872.6910	0.9291		2,895.9182
Total	**1.7109**	**17.9359**	**14.7507**	**0.0297**	**3.0278**	**0.7749**	**3.8027**	**1.4641**	**0.7129**	**2.1770**	**0.0000**	**2,872.6910**	**2,872.6910**	**0.9291**		**2,895.9182**

3.4 Grading - 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	0.0000	0.0000	0.0000	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	0.0505	0.0351	0.4768	1.3800e-003	0.1589	9.4000e-004	0.1599	0.0423	8.7000e-004	0.0432		139.9767	139.9767	3.6500e-003	3.5900e-003	141.1381
Total	**0.0505**	**0.0351**	**0.4768**	**1.3800e-003**	**0.1589**	**9.4000e-004**	**0.1599**	**0.0423**	**8.7000e-004**	**0.0432**		**139.9767**	**139.9767**	**3.6500e-003**	**3.5900e-003**	**141.1381**

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**

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	0.0536	1.9927	0.7536	9.4800e-003	0.3329	0.0106	0.3435	0.0958	0.0101	0.1060		1,023.915 9	1,023.915 9	0.0377	0.1486	1,069.148 8
Worker	0.3672	0.2547	3.4644	0.0101	1.2184	6.8700e-003	1.2252	0.3231	6.3200e-003	0.3294		1,017.164 3	1,017.164 3	0.0265	0.0261	1,025.603 8
Total	**0.4208**	**2.2474**	**4.2180**	**0.0195**	**1.5513**	**0.0174**	**1.5687**	**0.4190**	**0.0164**	**0.4354**		**2,041.080 3**	**2,041.080 3**	**0.0642**	**0.1747**	**2,094.752 6**

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	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

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	0.0536	1.9927	0.7536	9.4800e-003	0.3187	0.0106	0.3293	0.0924	0.0101	0.1025		1,023.915 9	1,023.915 9	0.0377	0.1486	1,069.148 8
Worker	0.3672	0.2547	3.4644	0.0101	1.1548	6.8700e-003	1.1617	0.3075	6.3200e-003	0.3138		1,017.164 3	1,017.164 3	0.0265	0.0261	1,025.603 8
Total	**0.4208**	**2.2474**	**4.2180**	**0.0195**	**1.4735**	**0.0174**	**1.4909**	**0.3999**	**0.0164**	**0.4163**		**2,041.080 3**	**2,041.080 3**	**0.0642**	**0.1747**	**2,094.752 6**

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		2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

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	0.0522	2.0012	0.7414	9.3400e-003	0.3329	0.0106	0.3435	0.0958	0.0102	0.1060		1,009.3778	1,009.3778	0.0377	0.1468	1,054.0510
Worker	0.3437	0.2275	3.2269	9.7700e-003	1.2184	6.5700e-003	1.2249	0.3231	6.0400e-003	0.3292		987.4525	987.4525	0.0241	0.0243	995.2905
Total	**0.3959**	**2.2287**	**3.9683**	**0.0191**	**1.5513**	**0.0172**	**1.5685**	**0.4190**	**0.0162**	**0.4352**		**1,996.8303**	**1,996.8303**	**0.0617**	**0.1710**	**2,049.3415**

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**

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	0.0522	2.0012	0.7414	9.3400e-003	0.3187	0.0106	0.3293	0.0924	0.0102	0.1025		1,009.3778	1,009.3778	0.0377	0.1468	1,054.0510
Worker	0.3437	0.2275	3.2269	9.7700e-003	1.1548	6.5700e-003	1.1614	0.3075	6.0400e-003	0.3136		987.4525	987.4525	0.0241	0.0243	995.2905
Total	**0.3959**	**2.2287**	**3.9683**	**0.0191**	**1.4735**	**0.0172**	**1.4907**	**0.3999**	**0.0162**	**0.4161**		**1,996.8303**	**1,996.8303**	**0.0617**	**0.1710**	**2,049.3415**

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**

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	0.0509	1.9924	0.7305	9.1600e-003	0.3329	0.0107	0.3436	0.0958	0.0102	0.1061		991.2749	991.2749	0.0378	0.1443	1,035.2229
Worker	0.3228	0.2044	3.0083	9.4400e-003	1.2184	6.2500e-003	1.2246	0.3231	5.7500e-003	0.3289		953.8917	953.8917	0.0217	0.0227	961.2008
Total	**0.3736**	**2.1968**	**3.7388**	**0.0186**	**1.5513**	**0.0169**	**1.5682**	**0.4190**	**0.0160**	**0.4349**		**1,945.1667**	**1,945.1667**	**0.0595**	**0.1670**	**1,996.4238**

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**

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	0.0509	1.9924	0.7305	9.1600e-003	0.3187	0.0107	0.3294	0.0924	0.0102	0.1026		991.2749	991.2749	0.0378	0.1443	1,035.2229
Worker	0.3228	0.2044	3.0083	9.4400e-003	1.1548	6.2500e-003	1.1611	0.3075	5.7500e-003	0.3133		953.8917	953.8917	0.0217	0.0227	961.2008
Total	**0.3736**	**2.1968**	**3.7388**	**0.0186**	**1.4735**	**0.0169**	**1.4904**	**0.3999**	**0.0160**	**0.4158**		**1,945.1667**	**1,945.1667**	**0.0595**	**0.1670**	**1,996.4238**

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

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	0.0444	0.0281	0.4140	1.3000e-003	0.1677	8.6000e-004	0.1685	0.0445	7.9000e-004	0.0453		131.2695	131.2695	2.9900e-003	3.1200e-003	132.2754
Total	**0.0444**	**0.0281**	**0.4140**	**1.3000e-003**	**0.1677**	**8.6000e-004**	**0.1685**	**0.0445**	**7.9000e-004**	**0.0453**		**131.2695**	**131.2695**	**2.9900e-003**	**3.1200e-003**	**132.2754**

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

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	0.0444	0.0281	0.4140	1.3000e-003	0.1589	8.6000e-004	0.1598	0.0423	7.9000e-004	0.0431		131.2695	131.2695	2.9900e-003	3.1200e-003	132.2754
Total	**0.0444**	**0.0281**	**0.4140**	**1.3000e-003**	**0.1589**	**8.6000e-004**	**0.1598**	**0.0423**	**7.9000e-004**	**0.0431**		**131.2695**	**131.2695**	**2.9900e-003**	**3.1200e-003**	**132.2754**

3.7 Architectural Coating - 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					
Archit. Coating	35.2293					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**35.4101**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.0000	0.0000	0.0000	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	0.0694	0.0459	0.6513	1.9700e-003	0.2459	1.3300e-003	0.2472	0.0652	1.2200e-003	0.0664		199.3023	199.3023	4.8500e-003	4.9000e-003	200.8843
Total	**0.0694**	**0.0459**	**0.6513**	**1.9700e-003**	**0.2459**	**1.3300e-003**	**0.2472**	**0.0652**	**1.2200e-003**	**0.0664**		**199.3023**	**199.3023**	**4.8500e-003**	**4.9000e-003**	**200.8843**

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	35.2293					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**35.4101**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.7 Architectural Coating - 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	0.0000	0.0000	0.0000	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	0.0694	0.0459	0.6513	1.9700e-003	0.2331	1.3300e-003	0.2344	0.0621	1.2200e-003	0.0633		199.3023	199.3023	4.8500e-003	4.9000e-003	200.8843
Total	**0.0694**	**0.0459**	**0.6513**	**1.9700e-003**	**0.2331**	**1.3300e-003**	**0.2344**	**0.0621**	**1.2200e-003**	**0.0633**		**199.3023**	**199.3023**	**4.8500e-003**	**4.9000e-003**	**200.8843**

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	35.2293					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	**35.4002**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

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	0.0652	0.0413	0.6072	1.9000e-003	0.2459	1.2600e-003	0.2472	0.0652	1.1600e-003	0.0664		192.5286	192.5286	4.3900e-003	4.5800e-003	194.0038
Total	**0.0652**	**0.0413**	**0.6072**	**1.9000e-003**	**0.2459**	**1.2600e-003**	**0.2472**	**0.0652**	**1.1600e-003**	**0.0664**		**192.5286**	**192.5286**	**4.3900e-003**	**4.5800e-003**	**194.0038**

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	35.2293					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	**35.4002**	**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	0.0652	0.0413	0.6072	1.9000e-003	0.2331	1.2600e-003	0.2343	0.0621	1.1600e-003	0.0632		192.5286	192.5286	4.3900e-003	4.5800e-003	194.0038
Total	**0.0652**	**0.0413**	**0.6072**	**1.9000e-003**	**0.2331**	**1.2600e-003**	**0.2343**	**0.0621**	**1.1600e-003**	**0.0632**		**192.5286**	**192.5286**	**4.3900e-003**	**4.5800e-003**	**194.0038**

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	lb/day										lb/day					
Mitigated	1.5216	1.7435	15.2401	0.0346	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,525.9651	3,525.9651	0.2319	0.1556	3,578.1259
Unmitigated	1.5216	1.7435	15.2401	0.0346	3.9329	0.0253	3.9582	1.0480	0.0235	1.0716		3,525.9651	3,525.9651	0.2319	0.1556	3,578.1259

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		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Research & Development	552.50	552.50	552.50	1,866,705	1,866,705
Total	552.50	552.50	552.50	1,866,705	1,866,705

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	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Research & Development	16.60	8.40	6.90	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644
Other Non-Asphalt Surfaces	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644

Research & Development	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644

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	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
NaturalGas Unmitigated	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	14219.2	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Total		**0.1533**	**1.3940**	**1.1710**	**8.3600e-003**		**0.1060**	**0.1060**		**0.1060**	**0.1060**		**1,672.8445**	**1,672.8445**	**0.0321**	**0.0307**	**1,682.7854**

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	14.2192	0.1533	1.3940	1.1710	8.3600e-003		0.1060	0.1060		0.1060	0.1060		1,672.8445	1,672.8445	0.0321	0.0307	1,682.7854
Total		**0.1533**	**1.3940**	**1.1710**	**8.3600e-003**		**0.1060**	**0.1060**		**0.1060**	**0.1060**		**1,672.8445**	**1,672.8445**	**0.0321**	**0.0307**	**1,682.7854**

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 Not 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	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Unmitigated	5.6012	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586

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	0.6370					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.9618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.3600e-003	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Total	**5.6012**	**2.3000e-004**	**0.0256**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0551**	**0.0551**	**1.4000e-004**		**0.0586**

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	0.6370					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	4.9618					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.3600e-003	2.3000e-004	0.0256	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0551	0.0551	1.4000e-004		0.0586
Total	**5.6012**	**2.3000e-004**	**0.0256**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0551**	**0.0551**	**1.4000e-004**		**0.0586**

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

APPENDIX B

Biological Resources Memo

January 13, 2022 JN 186903

UNIVERSITY OF CALIFORNIA, IRVINE
Attn: *Lindsey Hashimoto*
Campus Physical & Environmental Planning
4199 Campus Drive, Suite 380
Irvine, California 92697

SUBJECT: Results of a Biological Resources Assessment for the proposed Falling Leaves Foundation Medical Innovation Building – City of Irvine, Orange County, California

Dear Ms. Hashimoto:

Michael Baker International (Michael Baker) is pleased to submit this report to the University of California, Irvine (UCI) documenting the results of a biological resources assessment for the proposed Falling Leaves Foundation Medical Innovation Building (project or project site) located in the City of Irvine, Orange County, California. Michael Baker conducted a thorough literature review and a field survey to confirm existing site conditions and assess the potential for special-status[1] plant and wildlife species that have been documented or that are likely to occur on or within the project site and a 500-foot buffer (survey area). Specifically, this report provides a detailed assessment of the suitability of the on-site habitat to support special-status plant and wildlife species that were identified in the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database RareFind 5 (CNDDB; CDFW 2021a), the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CIRP; CNPS 2021), the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation Project Planning Tool (IPaC; USFWS 2021a), and other databases as potentially occurring in the vicinity of the project site.

Project Location

The project site is generally located north and east of State Route 73 (SR-73), west of SR-133, and south of Interstate 405 in the City of Irvine, Orange County, California (refer to Figure 1, *Regional and Project Vicinity*). The project site is depicted in an un-sectioned area of Township 6 South, Range 9 West, on the U.S. Geological Survey's (USGS) *Tustin, California* 7.5-minute quadrangle. Specifically, the project site is located north of Michael Drake Drive, west of Peltason Drive, south of Academy Way, and east of California Avenue, and spans the existing Health Sciences Road in the parking lots for Hewitt Research

[1] As used in this report, "special-status" refers to plant and wildlife species that are federally-/State-listed, proposed, or candidates; plant species that have been designated a California Rare Plant Rank species by the California Native Plant Society; wildlife species that are designated by the California Department of Fish and Wildlife as Fully Protected, Species of Special Concern, or Watch List species; and State/locally rare vegetation communities.

Hall and Sue and Bill Gross Hall; the 500-foot survey area extends to the south side of Michael Drake Drive but is otherwise contained within the same streets noted above (refer to Figure 2, *Survey Area*).

Project Description

The UCI is proposing the Falling Leaves Foundation Medical Innovation Building project, which would demolish portions of the existing surface parking Lots 82 and 83 and would construct an approximately 250,000-gross-square-foot (GSF) facility within the UCI West Campus to support collaborative, interdisciplinary, and innovative research in medicine and other health sciences disciplines. Proposed uses to be constructed within the new facility includes academic, laboratory, research, administrative, and support space. Additional improvements include realignment of the existing Health Sciences Road, landscaping, and lighting. Surrounding uses to the project site include Gross Hall, Hewitt Hall, and surface parking to the north; Gavin Herbert Eye Institute and Michael Drake Drive to the south; West Peltason Drive to the east; and surface parking to the west.

Methodology

Literature Review

Michael Baker conducted thorough literature reviews and records searches to determine which special-status biological resources have the potential to occur on or within the general vicinity (5-mile radius) of the project site. Previous special-status plant and wildlife species occurrence records within the USGS *Tustin*, *Laguna Beach*, and *Newport Beach, California* 7.5-minute quadrangles were determined through a query of the CNDDB (CDFW 2021a), CIRP (CNPS 2021), and IPaC (USFWS 2021a).

Current conservation status of species was verified through lists and resources provided by the CDFW, specifically the *Special Animals List* (CDFW 2021b), *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2021c), *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2021d), and *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFW 2021e). In addition, Michael Baker reviewed previously prepared reports, survey results, and literature, as available, detailing the biological resources previously observed on or within the vicinity of the project site to gain an understanding of existing site conditions, confirm previous species observations, and note the extent of any disturbances that have occurred within the project site that would otherwise limit the distribution of special-status biological resources. Standard field guides and texts were reviewed for specific habitat requirements of special-status species, as well as the following resources:

- Google Earth Pro Historical Aerial Imagery from 1985 to 2021 (Google Inc. 2021)
- Species Accounts provided by Birds of the World (Billerman et. al 2020)
- *Custom Soil Resource Report for Orange County and Part of Riverside County, California* (U.S. Department of Agriculture [USDA] 2021)
- USFWS Critical Habitat Mapper and Environmental Conservation Online System (USFWS 2021b)

Habitat Assessment/Field Survey

Michael Baker biologist Ryan Winkleman conducted a habitat assessment/field survey on November 17, 2021 to confirm existing site conditions within the project site. Mr. Winkleman surveyed the entire survey area. Vegetation communities occurring within the project site were mapped on an aerial photograph and classified in accordance with the vegetation descriptions provided in *A Manual of California Vegetation* (Sawyer et al. 2009) and cross referenced with the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986) for the purposes of evaluating the presence or absence of special-status vegetation communities identified in the CNDDB records search, which uses the Holland vegetation classification system. In addition, site characteristics such as soil condition, topography, hydrology, anthropogenic disturbances, indicator species, condition of on-site vegetation communities, and the presence of potentially regulated jurisdictional features (e.g., streams, flood control channels) were noted within the survey area. Michael Baker used Geographic Information Systems (GIS) ArcView software to digitize the mapped vegetation communities and then transferred these data onto an aerial photograph to further document existing conditions and quantify the acreage of each vegetation community. Refer to Table 1 below for a summary of the survey date, timing, surveyors, and weather conditions.

Table 1: Survey Date, Time, Surveyor, and Weather Conditions

Date	Time (start / finish)	Surveyor	Weather Conditions	
			Temperature (°F) (start / finish)	Wind Speed (mph) (start / finish)
November 17, 2021	0930 / 1210	Ryan Winkleman	68F, mostly cloudy / 69F, partly cloudy	1 – 2

All plant and wildlife species observed, as well as dominant plant species within each vegetation community, were recorded. Plant species observed during the habitat assessment/field survey were identified by visual characteristics and morphology in the field while unusual and less familiar plant species were photographed and identified later using taxonomic guides. Plant nomenclature used in this report follows the *Jepson eFlora* (Jepson Flora Project 2021) and scientific names are provided immediately following common names of plant species (first reference only). Wildlife detections were made through aural and visual detection, as well as observation of sign including scat, trails, tracks, burrows, and nests. Field guides used to assist with identification of wildlife species during the habitat assessment included *The Sibley Guide to Birds* (Sibley 2014), *A Field Guide to Western Reptiles and Amphibians* (Stebbins 2003), *Bats of the United States and Canada* (Harvey et al. 2011), and *A Field Guide to Mammals of North America* (Reid 2006). Although common names of wildlife species are well standardized, scientific names are provided immediately following common names of wildlife species in this report (first reference only). To the extent possible, nomenclature of birds follows the most recent annual supplement of the American Ornithological Society's *Checklist of North American Birds* (Chesser et al. 2020), nomenclature of amphibians and reptiles follows *Scientific and Standard English Names of Amphibians and Reptiles of North America North of Mexico, with Comments Regarding Confidence in Our Understanding* (Crother 2017), and nomenclature for mammals follows the *Revised Checklist of North American Mammals North of Mexico* (Bradley et al. 2014).

Existing Site Conditions

According to the *Custom Soil Resource Report for Orange County and Part of Riverside County, California* (USDA 2021), both the project site and surrounding 500-foot buffer are underlain by the following soil units: Myford sandy loam, 2 to 9 percent slopes, eroded (174), and Myford sandy loam, 9 to 30 percent slopes, eroded (177). The survey area is a mixture of natural vegetation communities with disturbed, developed, and ornamental land uses. The project site consists of an existing parking lot, landscaping, and road servicing the UCI West Campus. The surrounding 500-foot survey area includes additional parking lots, buildings within the School of Medicine (Hewitt Research Hall and Sue and Bill Gross Hall), and a partially-disturbed but undeveloped open space south of Michael Drake Drive. Based on historic aerial imagery, the raised bluff south of Michael Drake Drive has been routinely disturbed since between 2004 and 2005 and has been kept mostly clear of any substantive vegetation since then (Google Inc. 2021). Topographically, the project site is generally flat, gently sloping downwards to the north towards San Diego Creek, ranging from approximately 115 feet above mean sea level (amsl) to approximately 80 feet amsl. Refer to Attachment B for representative photographs of the survey area taken during the field survey.

Vegetation Communities and Land Cover Types

A total of eight (8) natural vegetation communities were observed and mapped within the boundaries of the surrounding survey area during the field survey: arroyo willow thickets, Goodding's willow – red willow riparian woodland and forest, mulefat thickets, California brittle bush – ashy buckwheat scrub, California buckwheat scrub, disturbed California buckwheat scrub, Menzies' golden bush scrub, and upland mustards or star-thistle fields. In addition, ornamental areas, disturbed habitat, and developed areas were mapped as other land cover types within the survey area. Ornamental vegetation and developed areas constitute the only land cover types within the project site boundaries. These vegetation community/land cover types are depicted on Figure 3, *Vegetation Communities, Land Uses, and Special-Status Species*, and described in further detail below. Additionally, refer to Attachment C for a complete list of plant species observed within the survey area during the field survey. Table 2 below provides the acreages of each vegetation community/land use on-site, with each discussed in detail below.

Table 2: Vegetation Communities and Land Uses within the Survey Area

Vegetation Communities and Other Land Uses	Acreage Total Within Survey Area
Arroyo Willow Thickets	0.09
Goodding's Willow – Red Willow Riparian Woodland and Forest	0.08
Mulefat Thickets	0.05
California Brittle Bush – Ashy Buckwheat Scrub	0.16
California buckwheat scrub	0.07
Disturbed California buckwheat scrub	0.16
Menzies' Golden Bush Scrub	0.19
Upland Mustards or Star-thistle Fields	0.59
Ornamental	6.71
Disturbed habitat	1.14
Developed	17.36
TOTAL*	**26.60**

*Total may not equal to sum due to rounding.

Arroyo Willow Thickets

Approximately 0.09 acre of arroyo willow thickets was mapped within the southeastern portion of the survey area, immediately south of Michael Drake Drive and associated with a drainage feature crossing under the road. Although several different species are present within this patch of vegetation including California sycamore (*Platanus racemosa*), lemonade berry (*Rhus integrifolia*), and coyotebush (*Baccharis* *pilularis*), this patch is dominated by arrow willow (*Salix lasiolepis*). The associated drainage is flowing downstream to the north towards San Diego Creek.

Goodding's Willow – Red Willow Riparian Woodland and Forest

Approximately 0.08 acre of Goodding's willow – red willow riparian woodland and forest was mapped within the southeastern portion of the survey area, immediately north of Michael Drake Drive and across the street from the arroyo willow thickets. These are part of the same drainage feature, with arroyo willow thickets being upstream of this community. This patch of vegetation was primarily dominated by black (Goodding's) willow (*Salix gooddingii*) with co-dominants consisting of arroyo willow, California sycamore, tipu tree (*Tipuana tipu*), and cattails (*Typha* sp.). This vegetation community is identified as an S3 sensitive natural community by CDFW (2021g), as described in more detail in the "Special-Status Vegetation Communities" section below.

Mulefat Thickets

Approximately 0.05 acre of mulefat thickets was mapped within the southeastern portion of the survey area, south of Michael Drake Drive. This is the same drainage feature as arroyo willow thickets and Goodding's willow – red willow riparian woodland and forest described above but is upstream of both within the survey area. This patch of vegetation is dominated by mulefat (*Baccharis salicifolia*), with patches of California mugwort (*Artemisia douglasiana*) growing in between.

California Brittle Bush – Ashy Buckwheat Scrub

Approximately 0.16 acre of California brittle bush – ashy buckwheat scrub was mapped in the southeastern portion of the survey area, south of Michael Drake Drive. This community was found growing on the edge of the UCI Ecological Preserve and consisted of a patch of bush sunflower (*Encelia californica*). This vegetation community is identified as an S3 sensitive natural community by CDFW (2021g), as described in more detail in the "Special-Status Vegetation Communities" section below.

California Buckwheat Scrub

Approximately 0.07 acre of California buckwheat scrub was mapped in the southeastern portion of the survey area, south of Michael Drake Drive. This community was found growing to the south of the California brittle bush – ashy buckwheat scrub community, also within the UCI Ecological Preserve. This community was dominated by California buckwheat (*Eriogonum fasciculatum*), with pinebush (*Ericameria pinifolia*) as a sub-dominant, growing in close proximity to each other.

Disturbed California Buckwheat Scrub

Approximately 0.16 acre of disturbed California buckwheat scrub was mapped in the southeastern portion of the survey area, south of Michael Drake Drive, growing between the California brittle bush – ashy buckwheat scrub community and the California buckwheat scrub community, within the UCI Ecological Preserve. This community is a more disturbed version of the California buckwheat scrub, with the intershrub spaces generally filled with dense and high-growing black mustard (*Brassica nigra*).

Menzies' Golden Bush Scrub

Approximately 0.16 acre of Menzies' golden bush scrub was mapped in the southeastern portion of the survey area, immediately south of Michael Drake Drive. This community was dominated by Menzies' goldenbush (*Isocoma menziesii*) with small numbers of deerweed (*Acmispon glaber*), pinebush, and mulefat along the edges. This vegetation community is identified as an S3 sensitive natural community by CDFW (2021g), as described in more detail in the "Special-Status Vegetation Communities" section below.

Upland Mustards or Star-thistle Fields

Approximately 0.59 acre of upland mustards or star-thistle fields was mapped in the southeastern portion of the survey area, south of Michael Drake Drive. This community was found growing in between the various native vegetation communities on the UCI Ecological Preserve and was characterized primarily by densely-growing black mustard. It is distinguished in this report from disturbed habitat, which was also mapped through much of the UCI Ecological Preserve within the survey area, by its lack of maintenance.

Ornamental

Approximately 6.71 acres of ornamental vegetation was mapped throughout the entire survey area, including the parking lot plantings around the UCI West Campus, ornamental plantings surrounding buildings, and ornamental plantings along roads. The ornamental plantings showcase a variety of different species; some of the more commonly occurring species within the ornamental areas include Chinese flame tree (*Koelreuteria bipinnata*), privet (*Ligustrum* sp.), Brisbane box (*Lophostemon confertus*), African sumac (*Searsia lancea*), fountaingrass (*Pennisetum setaceum*), fortnight lily (*Dietes iridioides*), and African daisy (*Dimorphotheca* sp.).

Disturbed Habitat

Disturbed habitat areas comprise approximately 0.13 acre of the survey area. These areas have been physically disturbed by anthropogenic activities (e.g., routine weed abatement activities [i.e., disking, tilling], pedestrian traffic, recreational land uses) and are no longer recognized as a native vegetation community but continue to hold a soil substrate. Surface soils within these areas are heavily disturbed, eroded, and compacted. Vegetation that is present primarily consists of ruderal/weedy plant species including ripgut brome (*Bromus diandrus*), Italian thistle (*Carduus pycnocephalus*), Maltese star-thistle (*Centaurea melitensis*), short podded mustard (*Hirschfeldia incana*), prickly lettuce (*Lactuca serriola*), and white horehound (*Marrubium vulgare*).

Developed

Developed areas comprise approximately 3.93 acres of the survey area and consist of paved areas (e.g., the West Campus parking lot, Michael Drake Drive) that have been constructed upon or physically altered to a degree that natural soil substrates and native vegetation are no longer supported.

Wildlife

Natural vegetation communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a general discussion of common wildlife species that were detected by Michael Baker during the field survey or that are expected to occur based on existing site conditions. This is to be used as a general reference and is limited by the season, time of day, and weather conditions in which the field survey was conducted. A total of twenty-eight (28) wildlife species were observed during the November 17, 2021 field survey. All 28 species were birds, with no other taxonomic Classes identified. The most commonly-occurring species detected during the survey were Anna's hummingbird (*Calypte anna*), American crow (*Corvus brachyrhynchos*), bushtit (*Psaltriparus minimus*), white-crowned sparrow (*Zonotrichia leucophrys*), and yellow-rumped warbler (*Setophaga coronata*). Refer to Attachment C for a complete list of wildlife species observed within the project site during the field survey.

Due to a lack of suitable flowing aquatic habitat within the survey area, fish would not be expected to occur. Amphibians are expected to be largely absent within the survey area as well for the same reason, although western toad (*Anaxyrus boreas*) and Baja California treefrog (*Pseudacris hypochondriaca*) may occasionally occur if there is standing water or if the soil is moist. Reptiles that are acclimated to the urban/wild interface and edge habitats may be present including species such as western fence lizard (*Sceloporus occidentalis*), side-blotched lizard (*Uta stansburiana*), alligator lizard (*Elgaria multicarinata*), and gopher snake (*Pituophis catenifer*). Common mammalian species that may occur within the surrounding survey area include California ground squirrel (*Otospermophilus beecheyi*), fox squirrel (*Sciurus niger*), desert cottontail (*Sylvilagus audubonii*), opossum (*Didelphis virginiana*), and racoon (*Procyon lotor*). None of these species were detected during Michael Baker's field survey.

Nesting Birds

Nesting birds are protected pursuant to the federal Migratory Bird Treaty Act (MBTA) of 1918 and the California Fish and Game Code (CFGC)[2]. To maintain compliance with the MBTA and CFGC, clearance surveys are typically required prior to any ground disturbance or vegetation removal activities to avoid direct or indirect impacts to active bird nests and/or nesting birds. Consequently, if an active bird nest is destroyed or if project activities result in indirect impacts (e.g., nest abandonment, loss of reproductive effort) to nesting birds, it is considered "take" and is potentially punishable by fines and/or imprisonment. The survey area provides limited nesting habitat for most year-round and seasonal avian residents other than those that nest on the open ground (e.g., killdeer [*Charadrius vociferus*]). However, no active nests or birds displaying overt nesting behavior were observed during the field survey.

Migratory Corridors and Linkages

Wildlife corridors and linkages are key features for wildlife movement between habitat patches. Wildlife corridors are generally defined as those areas that provide opportunities for individuals or local populations to conduct seasonal migrations, permanent dispersals, or daily commutes, while linkages generally refer to broader areas that provide movement opportunities for multiple keystone/focal species or allow for propagation of ecological processes (e.g., for movement of pollinators), often between areas of conserved land.

The project site is located across the street from undeveloped land that leads into the UCI Ecological Preserve. The UCI Ecological Preserve is a designated reserve under the Orange County Central/Coastal

2 Section 3503 makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by the California Fish and Game Code or any regulation made pursuant thereto; Section 3503.5 makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey); and Section 3513 makes it unlawful to take or possess any migratory non-game bird except as provided by the rules and regulations adopted by the Secretary of the Interior under provisions of the Migratory Bird Treaty Act, as amended (16 U.S.C. § 703 *et seq.*).

Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) and links to open space habitat to the south of SR-73. Areas to the south of SR-73 are also designated as special linkages under the NCCP/HCP connecting to the San Joaquin Hills and the Laguna Coast Wilderness to the east. In addition, there is open space remaining immediately to the east of the UCI West Campus, between the School of Medicine to the east and California Avenue to the west. A portion of this land on its southern end is currently under development, but the northern end terminates at Academy Way, less than 0.25 mile south of San Diego Creek. However, the project site is located entirely within an existing developed parking lot. Although wildlife is expected to be abundant in the open space areas to the east and west, the project site itself has very little capacity to function as any sort of migratory corridor or linkage due to the extensive use of the parking lots and academic buildings that are already present within and around the project footprint. There may be occasional movement of large mammals across the parking lot, but the project site itself is already entirely developed and its future construction is ultimately not expected to create any additional barriers than those that are already present and that currently serve as restrictions to wildlife movement.

State and Federal Jurisdictional Resources

There are three agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The U.S. Army Corps of Engineers (USACE) Regulatory Branch regulates discharge of dredged or fill material into "waters of the U.S." pursuant to Section 404 of the federal Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the Regional Water Quality Control Board (RWQCB) regulates discharges to surface waters pursuant to Section 401 of the CWA and Section 13263 of the California Porter-Cologne Water Quality Control Act, and the CDFW regulates alterations to streambed and associated vegetation communities under Section 1600 *et seq*. of the CFGC.

Two (2) potentially jurisdictional features are located within the survey area, both along the periphery of the survey area and well away from the proposed project site. The first flows through the UCI Ecological Preserve, flowing downstream to the north towards San Diego Creek, and passes under Michael Drake Drive at the southwest quadrant of the intersection of Michael Drake Drive and East Peltason Drive before emerging in the northwest quadrant of the same intersection, flowing through riparian vegetation, and then continuing to flow to the north in a shallowly incised earthen channel in a manicured lawn, parallel with West Peltason Drive. This feature is identified as a blue-line intermittent stream on the USGS *Tustin*, *CA* quadrangle. The second feature is also located south of Michael Drake Drive, running parallel to Health Sciences Road. It is vegetated with ornamental drought-tolerant landscaping and flows to the north under Michael Drake Drive with no clear point of emergence, although it is possible it crosses to the east underground and ties in subsurface with the first feature above. Neither drainage feature is located anywhere near the project site and there is no potential for project equipment, materials, or spoils to be placed in or near either feature. Therefore, development of the project is not expected to result in impacts to State or federal jurisdictional areas or require regulatory approvals/permits from the USACE, RWQCB, or CDFW. Because of the distance from the project site/impact area, a jurisdictional delineation of either feature is not recommended.

Special-Status Biological Resources

Although a 500-foot buffer was evaluated around the project site for the survey area, the project footprint is located in a developed parking lot and all impacts would be entirely restricted to areas that are already developed, well away from any natural vegetation communities or native habitats. Therefore although the records search results included in Attachment D incorporated the survey buffer and surrounding USGS quadrangles within a 5-mile radius to determine what special-status species are known to occur in the project vicinity for reference purposes, the following analysis will only consider the potential for special-status species to occur within or in areas immediately adjacent to the project site due to the highly developed existing project site and general lack of potential to impact areas outside of the project footprint.

The CNDDB (CDFW 2021a), CIRP (CNPS 2021), and IPaC (USFWS 2021a) were queried for reported locations of special-status plant and wildlife species as well as special-status natural vegetation communities in the USGS *Tustin*, *Laguna Beach*, and *Newport Beach, California* 7.5-minute quadrangles. The field survey was conducted to assess the conditions of the habitat(s) within the boundaries of the project site and survey area to determine if the existing vegetation communities, at the time of the field survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species. Additionally, the potentials for special-status species to occur within the project site were determined based on the reported occurrence locations in the CNDDB and CIRP and the following criteria:

- **Present**: the species was observed or detected within the survey area during the field survey.
- **High**: Occurrence records (within 20 years) indicate that the species has been known to occur on or within 1 mile of the survey area and the site is within the normal expected range of this species. Intact, suitable habitat preferred by this species occurs within the survey area and/or there is viable landscape connectivity to a local known extant population(s) or sighting(s).
- **Moderate**: Occurrence records (within 20 years) indicate that the species has been known to occur within 1 mile of the survey area and the survey area is within the normal expected range of this species. There is suitable habitat within the survey area, but the site is ecologically isolated from any local known extant populations or sightings.
- **Low**: Occurrence records (within 20 years) indicate that the species has been known to occur within 5 miles of the survey area, but the site is outside of the normal expected range of the species and/or there is poor quality or marginal habitat within the survey area.
- **Not Expected**: There are no occurrence records of the species occurring within 5 miles of the survey area, there is no suitable habitat within the survey area, and/or the survey area is outside of the normal expected range for the species.

The CNDDB, CIRP, and IPaC databases identified forty-nine (49) special-status plant species and forty-seven (47) special-status wildlife species as occurring within the USGS *Tustin*, *Laguna Beach*, and *Newport Beach, California* 7.5-minute quadrangles. In addition, seven (7) special-status vegetation communities were identified. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on specific habitat requirements, availability/quality of suitable habitat, and known distributions of species/populations. Special-status biological resources identified during the literature review are presented in Attachment D.

Special-Status Plants

A total of forty-nine (49) special-status plant species have been recorded in the USGS *Tustin*, *Laguna Beach*, and *Newport Beach, California* 7.5-minute quadrangles by the CNDDB, CIRP, and IPaC databases (refer to Attachment D). No special-status plant species were identified within the survey area during the

November 2021 field survey. Nearly all of the vegetation within the survey area is ornamental, intentionally planted as part of university landscaping. The only naturally-occurring vegetation of note within the entire survey area is in its southeastern portion, immediately north of Michael Drake Drive along the drainage feature and in the UCI Ecological Preserve located to the south of Michael Drake Drive. While special-status plant species may occur in the UCI Ecological Preserve, none were found in the small section of the preserve that is located within the survey area, and because of the nature of the project, its construction, and its location, there is no potential for the project to impact any special-status plant species that may be in the UCI Ecological Preserve, either in the survey area or in areas farther east. Although Michael Baker's field survey was conducted in November, outside of the typical plant blooming season, because the project site is an existing asphalt parking lot and associated ornamental vegetation, Michael Baker determined that all of the special-status plant species identified by the CNDDB, CIRP, and IPaC databases are not expected to occur within the project site.

Special-Status Wildlife

A total of forty-seven (47) special-status wildlife species have been recorded in the USGS *Tustin*, *Laguna Beach*, and *Newport Beach, California* 7.5-minute quadrangles by the CNDDB and IPaC databases (refer to Attachment D). Two (2) special-status wildlife species were detected within the survey area during the November 2021 field survey, coastal California gnatcatcher (*Polioptila californica californica*; a federally threatened species and California Species of Special Concern (SSC)) and yellow warbler (*Setophaga petechia*; a California SSC). The gnatcatcher was found foraging in the California buckwheat scrub in the southeastern end of the survey area and the yellow warbler was found wintering in the Goodding's willow – red willow riparian woodland and forest, also in the southeastern section of the survey area. Neither species would be expected to nest or forage within the project site due to a lack of any suitable habitat in the project site, and neither would be affected by the project. A northern harrier (*Circus hudsonius*; a California SSC) was observed foraging within the UCI Ecological Preserve in the distance, approximately 0.25 mile east of the survey area. This species may occasionally forage within the southeastern limits of the survey area but would not be expected to occur within the project site unless flying through.

Based on the results of the field survey and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, Michael Baker determined that the project site has a high potential to support foraging Cooper's hawks (*Accipiter cooperii*; a State Watch List species) and a high potential to support perching/roosting white-tailed kites (*Elanus leucurus*; a California Fully Protected species), with a low potential for kites to actively forage on-site. Due to the high levels of disturbance and lack of suitable nest trees, neither species would be expected to nest within the project site. Cooper's hawks are fairly common urban raptors that routinely hunt opportunistically, often targeting smaller birds. As a result, they can be expected to hunt on and around the project site. Mr. Winkleman previously observed a white-tailed kite foraging in the open space to the west of the project site, between the UCI West Campus and California Avenue, as well as perching within the UCI West Campus parking lot just to the west of the project site boundaries, during an unrelated survey in April 2021, and this species is known to currently nest on the western edge of the University Hills complex, adjacent to the northeastern corner of the UCI Ecological Preserve. However, unlike Cooper's hawks, white-tailed kites are highly specific in their dietary preferences, with their diets in the southern California populations consisting almost entirely of three species of small mammals—California vole (*Microtus californicus*), house mouse (*Mus musculus*), and western harvest mouse (*Reithrodontomys megalotis*)—that would be unlikely to occur more than sparingly within a concrete parking lot (relative to surrounding open space areas). Therefore, although white-tailed kites may perch in the parking lot and may on rare occasions find prey in the parking lot, there is no nesting habitat and the incidences of foraging on or immediately around the project site are likely to be very low. Neither of these species were detected within the survey area or observed incidentally in the immediate surrounding area during Michael Baker's November 2021 survey, although they are known to be present and resident in the vicinity.

All remaining special-status wildlife species identified by the CNDDB and IPaC databases either have a low potential or are not expected to occur within the project site.

Special-Status Vegetation Communities

Seven (7) special-status vegetation communities have been reported in the USGS *Tustin*, *Laguna Beach*, and *Newport Beach, California* 7.5-minute quadrangles by the CNDDB: Southern Coast Live Oak Riparian Forest, Southern Coastal Salt Marsh, Southern Cottonwood Willow Riparian Forest, Southern Dune Scrub, Southern Foredunes, Southern Sycamore Alder Riparian Woodland, and Valley Needlegrass Grassland. These special-status vegetation communities identified by the CNDDB were not observed in the survey area during the field survey.

According to the latest draft of the *California Natural Communities List* (dated August 18, 2021), Goodding's willow – red willow riparian woodland and forest, California brittle bush – ashy buckwheat scrub, and Menzies' golden bush scrub are all considered sensitive natural communities with state sensitivity ranks of S3 (CDFW 2021f). Sensitive natural communities with sensitivity ranks of S1, S2, and S3 as listed in the California Natural Communities List are required to be addressed in the California Environmental Quality Act (CEQA) review process. However, none of these communities are located in or near the project site and none of them have any potential to be impacted by project construction, directly or indirectly and no further action is necessary.

Critical Habitat

Under the definition used by the federal Endangered Species Act (FESA), designated "Critical Habitat" refers to specific areas within the geographical range of a species that were occupied at the time it was listed that contain the physical or biological features that are essential to the survival and eventual recovery of that species and that may require special management considerations or protection, regardless of whether the species is still extant in the area. Areas that were not known to be occupied at the time a species was listed can also be designated Critical Habitat if they contain one or more of the physical or biological features that are essential to that species' conservation and if the other areas that are occupied are inadequate to ensure the species' recovery. If a project may result in take or adverse modification to a species' designated Critical Habitat and the project has a federal nexus, the project proponent may be required to provide suitable mitigation. Projects with a federal nexus may include projects that occur on federal lands, require federal permits (e.g., CWA Section 404 permit), or receive any federal oversight or funding. If there is a federal nexus, then the federal agency that is responsible for providing funds or permits would be required to consult with the USFWS under the FESA. The survey area is not located within designated Critical Habitat for any federally listed species; the closest designated Critical Habitat is located approximately two (2) miles to the east for California gnatcatcher.

Local Policies and Ordinances

Central/Coastal Orange County Natural Community Conservation Plan/Habitat Conservation Plan

The Orange County NCCP/HCP is a comprehensive, multi-jurisdictional habitat conservation plan focusing on conservation of species and their associated habitats in Orange County. The Orange County NCCP/HCP focuses on protection of coastal sage scrub habitat and three designated "Target Species": the coastal California gnatcatcher, coastal cactus wren (*Campylorhynchus brunneicapillus sandiegensis*; a California SSC), and orange-throated whiptail (*Aspidoscelis hyperythra*; a California SSC). A reserve area was created to meet the ecological requirements of these three (3) species and thirty-six (36) other "Identified Species," with the understanding that the three target species would serve as "surrogates" for the broader suite of organisms that depend upon coastal sage scrub for their continued survival in the Orange County NCCP/HCP planning area. The Implementing Agreement (IA) satisfies the State and Federal mitigation requirements for designated development and adequately provides for the conservation and protection of the 39 species and their habitats identified in the Orange County NCCP/HCP.

Specifically, the survey area is located within the Coastal Subregion of the Orange County NCCP/HCP and is subject to the requirements and provisions set forth in the Orange County NCCP/HCP, which specifies that the populations of the target species shall be subject to long-term monitoring and that these taxa shall be treated as if they were listed under CESA/FESA.

The survey area is not located within the NCCP Reserve or within a designated Special Linkage or Existing Use Area. All impacts would occur to ornamental habitat and developed areas in an existing parking lot surrounded by other school facilities, further insulating any naturally-occurring and/or protected NCCP areas from project-related impacts. A single California gnatcatcher was found inside the survey area during the November 2021 field survey, within the limits of the UCI Ecological Preserve, but none of the three target species were found within the project site, and there is no suitable habitat for any of them within the project site. Therefore, this project does not require any additional mitigation for impacts to target or identified species and their habitat. Other than implementation of Best Management Practices (BMPs) and general compliance with standard environmental regulations such as those pertaining to protection of nesting birds, no additional mitigation is expected under the Orange County NCCP/HCP.

City of Irvine Tree Removal Ordinance

The project is entirely located on land within the jurisdiction of the University of California, would not affect any trees under City of Irvine jurisdiction, and is not subject to any external tree ordinances.

Conclusions and Recommendations

A total of eight (8) natural vegetation communities were observed and mapped within the boundaries of the surrounding survey area during the field survey: arroyo willow thickets, Goodding's willow – red willow riparian woodland and forest, mulefat thickets, California brittle bush – ashy buckwheat scrub, California buckwheat scrub, disturbed California buckwheat scrub, Menzies' golden bush scrub, and upland mustards or star-thistle fields. In addition, ornamental areas, disturbed habitat, and developed areas were mapped as other land cover types within the survey area. Ornamental vegetation and developed areas constitute the only land cover types within the project site boundaries. Although Goodding's willow – red willow riparian woodland and forest, California brittle bush – ashy buckwheat scrub, and Menzies' golden bush scrub are all considered sensitive natural communities according to the *California Natural Communities List* (CDFW

2021g), the Orange County NCCP/HCP has its own mitigation requirements for loss of vegetation communities according to its agreements and permits, and all three of these communities are located well outside of the project site and would not be affected by project construction. As such, no further actions are necessary in regards to special-status vegetation communities.

No special-status plant species were identified within the survey area during the November 2021 field survey. Nearly all of the vegetation within the survey area is ornamental, intentionally planted as part of university landscaping, except for the southeastern portion of the survey area immediately north of Michael Drake Drive and in the UCI Ecological Preserve located to the south of Michael Drake Drive. Because of the nature of the project, its construction, and its location, there is no potential for the project to impact any special-status plant species that may be in the UCI Ecological Preserve, either in the survey area or in areas farther east. Because the project site is an existing asphalt parking lot and associated ornamental vegetation, Michael Baker determined that all of the special-status plant species identified by the CNDDB, CIRP, and IPaC databases are not expected to occur within the project site.

Two (2) special-status wildlife species were detected within the survey area during the November 2021 field survey, coastal California gnatcatcher and yellow warbler. Neither species would be expected to nest or forage within the project site due to a lack of any suitable habitat, and neither would be affected by the project. A northern harrier was observed foraging within the UCI Ecological Preserve in the distance, and while this species may occasionally forage within the southeastern limits of the survey area it would not be expected to occur within the project site unless flying through. Based on the results of the field survey and a review of specific habitat preferences, occurrence records, known distributions, and elevation ranges, Michael Baker determined that the project site has a high potential to support foraging Cooper's hawks and a high potential to support perching/roosting white-tailed kites, with a low potential for kites to actively forage on-site. Neither species would be expected to nest within the project site, and neither species was detected during Michael Baker's November 2021 survey, although they are known to be present and resident in the vicinity. All remaining special-status wildlife species identified by the CNDDB and IPaC databases either have a low potential or are not expected to occur within the project site.

In order to avoid and/or minimize potential impacts to biological resources, it is recommended that the following Avoidance and Minimization Measures (AMM) be implemented:

AMM BIO-1: If project-related activities are to be initiated during the nesting season (January 1 to August 31), a pre-construction nesting bird clearance survey shall be conducted by a qualified biologist no more than three (3) days prior to the start of any vegetation removal or ground disturbing activities. The qualified biologist shall survey all suitable nesting habitat within the project impact area, and areas within a biologically defensible buffer zone surrounding the project impact area. If no active bird nests are detected during the clearance survey, project activities may begin, and no additional avoidance and minimization measures shall be required. If an active bird nest is found, the species shall be identified, and a "no-disturbance" buffer shall be established around the active nest. The size of the "no-disturbance" buffer shall be increased or decreased based on the judgement of the qualified biologist and level of activity and sensitivity of the species. The qualified biologist shall periodically monitor any active bird nests to determine if project-related activities occurring outside the "no-disturbance" buffer disturb the birds and if the buffer shall be increased. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, project activities within the "no-disturbance" buffer may occur following an additional survey by the qualified biologist to search for any new bird nests in the restricted area.

Please do not hesitate to contact me at (949) 533-0918 or ryan.winkleman@mbakerintl.com should you have any questions or require further information.

Sincerely,

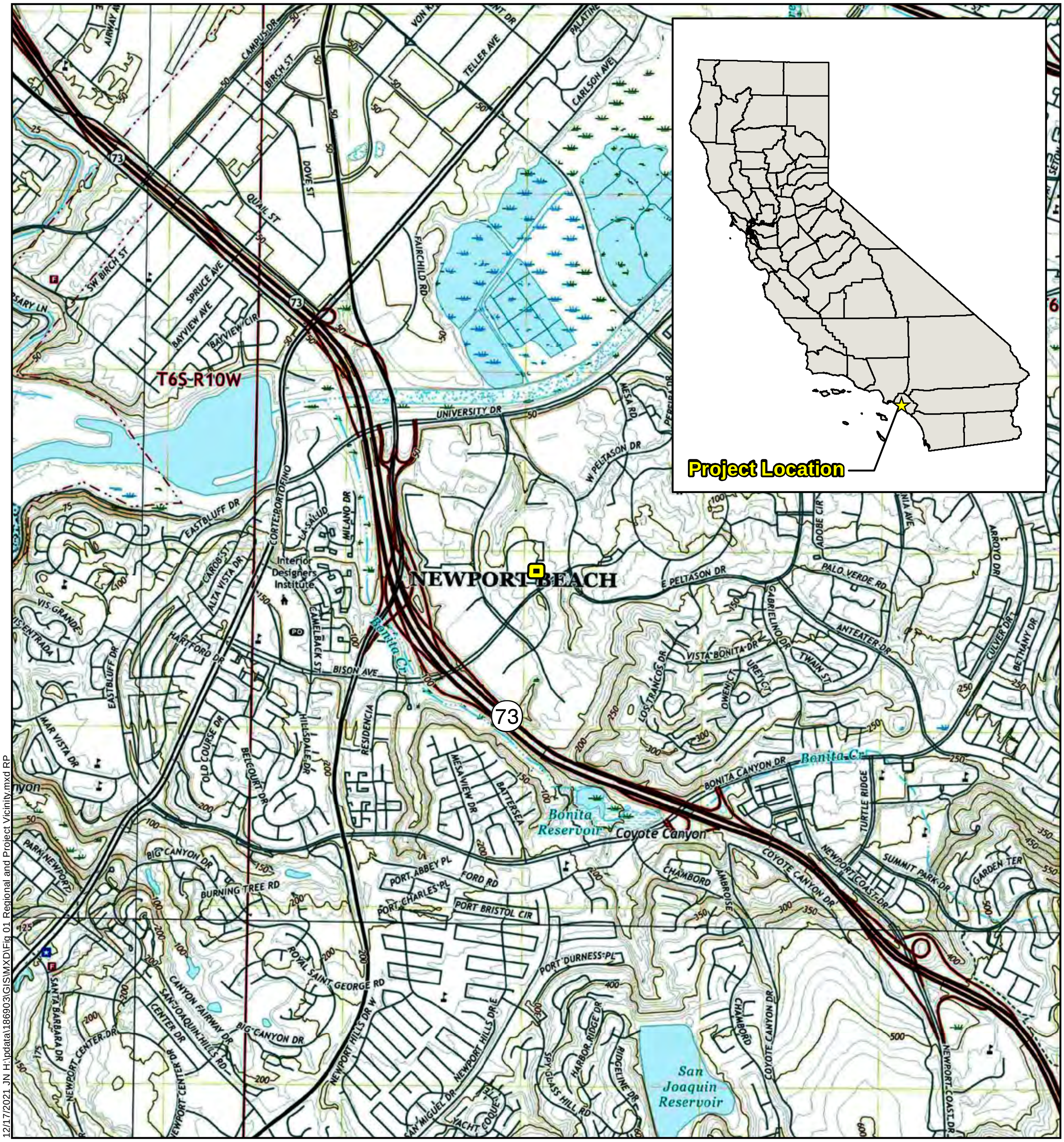
Ryan Winkleman
Senior Biologist
Natural Resources and Regulatory Permitting

Attachments:

A. Project Figures
B. Site Photographs
C. Plant and Wildlife Species Observed List
D. Literature Review Results
E. References

Attachment A

Project Figures



12/17/2021 JN H:\pdata\186903\GIS\MXD\Fig 01 Regional and Project Vicinity.mxd RP

Legend

Project Site

Michael Baker INTERNATIONAL

0 0.25 0.5 Miles

Source: USGS 7.5-Minute topographic quadrangle maps: *Laguna Beach, Newport Beach, Newport Beach OE S, and Tustin, California (2018)*

FALLING LEAVES FOUNDATION MEDICAL INNOVATION BUILDING
BIOLOGICAL RESOURCES ASSESSMENT

Regional and Project Vicinity

Figure 1

Legend

Project Site

Survey Area (500-foot Buffer)

Reference Point

Photograph Point and Direction

0 85 170 Feet

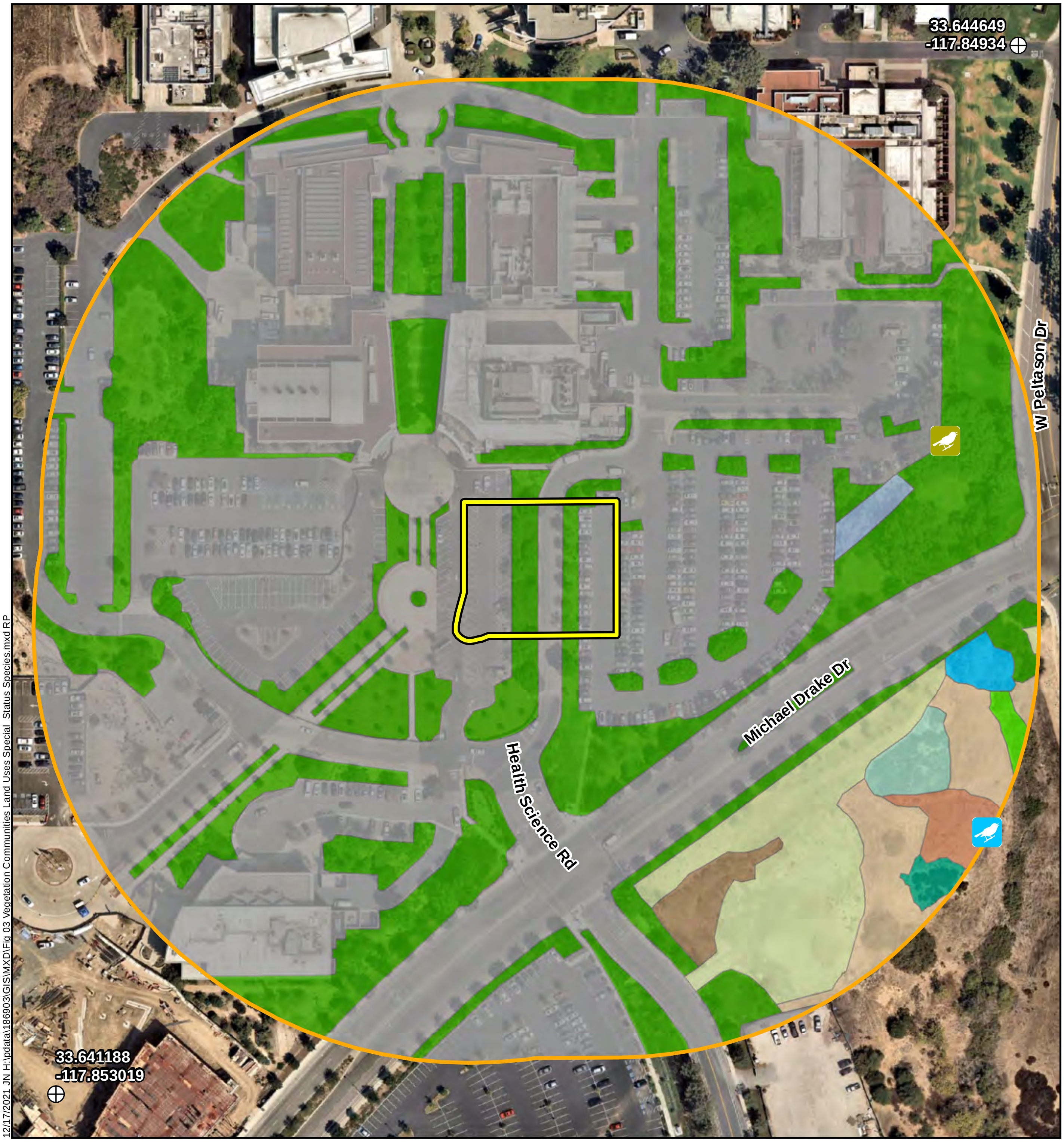
Source: Nearmap (09/2021)

Michael Baker INTERNATIONAL

FALLING LEAVES FOUNDATION MEDICAL INNOVATION BUILDING
BIOLOGICAL RESOURCES ASSESSMENT

Survey Area

Figure 2



Legend

- Project Site
- Survey Area (500-foot Buffer)
- Reference Point

Vegetation Communities and Land Uses

- Arroyo Willow Thickets (0.09 acre)
- Goodding's Willow - Red Willow Riparian Woodland and Forest (0.08 acre)
- Mulefat Thickets (0.05 acre)
- California Brittle Bush - Ashy Buckwheat Scrub (0.16 acre)
- California Buckwheat Scrub (0.07 acre)
- Disturbed California Buckwheat Scrub (0.16 acre)
- Menzies' Golden Bush Scrub (0.19 acre)
- Upland Mustards or Star-thistle Fields (0.59 acre)
- Ornamental (6.71 acre)
- Disturbed Habitat (1.14 acres)
- Developed (17.36 acres)

Special-status Species

- Coastal California Gnatcatcher (*Polioptila californica californica*)
- Yellow Warbler (*Setophaga petechia*)

Michael Baker INTERNATIONAL

0 85 170 Feet

Source: Nearmap (09/2021)

FALLING LEAVES FOUNDATION MEDICAL INNOVATION BUILDING
BIOLOGICAL RESOURCES ASSESSMENT

Vegetation Communities, Land Uses, and Special-Status Species

Figure 3

Attachment B

Site Photographs

Photograph 1: Standing in the northeastern corner of the project site, facing northwest. The project site is in an existing heavily-used parking lot.

Photograph 2: Standing along the eastern edge of the project site, facing west. The project site is split between an upper lot (not visible in background) and lower lot (foreground).

Photograph 3: Standing in the northern center of the project site, facing south. The project site is bisected by Health Sciences Road and an ornamentally-vegetated slope.

Photograph 4: Standing in the northwestern corner of the project site, facing south at the upper lot.

Photograph 5: Standing in the southwest corner of the project site, facing north at the upper lot.

Photograph 6: Standing in the southern center of the project site on Health Sciences Road, facing north with the lower lot on the right and the upper lot to the left above the ornamental slope.

Photograph 7: Standing to the west of the project site, facing east at the upper lot.

Photograph 8: Standing to the north of the project site, facing north between Hewitt Research Hall and Sue and Bill Gross Hall. Most of the surrounding survey area is buildings, parking lots, and/or ornamental landscaping.

Photograph 9: Standing to the northwest of the project site, facing southeast at Hewitt Research Hall.

Photograph 10: Standing to the southwest of the project site, facing northeast.

Photograph 11: Standing at the southeastern quadrant of Michael Drake Drive and Health Sciences Road, facing northeast at disturbance on the edge of the UCI Ecological Preserve.

Photograph 12: Standing south of Michael Drake Drive, facing southeast at the UCI Ecological Preserve. The Ecological Preserve would not be impacted by the proposed project.

Photograph 13: Standing south of Michael Drake Drive, facing east at the UCI Ecological Preserve.

Photograph 14: Standing north of Michael Drake Drive, facing southwest at riparian vegetation growing along the intermittent creek. This is distanced from the project site and would not be impacted by project construction.

Attachment C

Plant and Wildlife Species Observed List

Table C-1: Plant and Wildlife Species Observed List

*Scientific Name**	Common Name	Cal-IPC Rating**	Special-Status Rank***
Plants			
Acacia sp.*	acacia		
Achillea millefolium	yarrow		
*Agave americana**	American century plant		
Ambrosia psilostachya	ragweed		
Artemisia californica	California sagebrush		
Artemisia douglasiana	mugwort		
Baccharis pilularis	coyote brush		
Baccharis salicifolia	mulefat		
*Bougainvillea spectabilis**	bougainvillea		
*Brassica nigra**	black mustard	Moderate	
*Bromus madritensis**	foxtail chess	High	
*Carpobrotus edulis**	iceplant	High	
*Centaurea melitensis**	tocalote	Moderate	
*Chitalpa tashkentensis**	chitalpa		
Clarkia epilobioides	willow herb		
*Cortaderia selloana**	pampas grass	High	
Cotoneaster sp.*	cotoneaster	Moderate	
*Cupaniopsis anacardioides**	carrotwood		
*Cynara cardunculus**	artichoke thistle	Moderate	
*Dietes iridioides**	fortnight lily		
Dimorphotheca sp.*	African daisy		
Distichlis spicata	salt grass		
*Echium candicans**	pride of Madeira	Limited	
Encelia californica	bush sunflower		
Ericameria pinifolia	pinebush		
Eriogonum fasciculatum	California buckwheat		
Eucalyptus sp.*	eucalyptus		
Euphorbia sp.*	spurge		
Heteromeles arbutifolia	toyon		
Heterotheca grandiflora	telegraph weed		
*Hirschfeldia incana**	shortpod mustard	Moderate	
Isocoma menziesii	Menzies' goldenbush		
*Jacaranda mimosifolia**	jacaranda		
Juncus acutus	spiny rush		
*Koelreuteria bipinnata**	Chinese flame tree		
Lagerstroemia sp.*	crepe myrtle		
*Lantana camara**	lantana	Watch	
Leymus condensatus	giant rye grass		
Ligustrum sp.*	privet		
*Lonicera japonica**	Japanese honeysuckle		

Table C-1: Plant and Wildlife Species Observed List

*Scientific Name**	Common Name	Cal-IPC Rating**	Special-Status Rank***
Lophostemon confertus	Brisbane box*		
*Markhamia lutea**	Nile tulip		
*Melia azedarach**	China berry		
*Melilotus indicus**	yellow sweetclover		
Muhlenbergia rigens	deergrass		
*Myoporum laetum**	Ngaio tree	Moderate	
*Olea europaea**	olive	Limited	
Opuntia sp.	prickly pear		
*Oxalis pes-caprae**	sourgrass	Moderate	
*Pennisetum setaceum**	fountaingrass	Moderate	
*Phormium tenax**	New Zealand flax		
*Pinus canariensis**	Canary Island pine		
Platanus racemosa	California sycamore		
*Polypogon monspeliensis**	rabbitsfoot grass	Limited	
Populus fremontii	Fremont's cottonwood		
*Quercus virginiana**	southern live oak		
Rhus integrifolia	lemonade berry		
Rhus ovata	sugarbush		
*Ricinus communis**	castor bean	Limited	
*Rosmarinus officinalis**	rosemary		
Salix gooddingii	black willow		
Salix laevigata	red willow		
Salix lasiolepis	arroyo willow		
*Salsola tragus**	Russian thistle	Limited	
Salvia clevelandii	Cleveland sage		
Salvia sp.	sage		
*Searsia lancea**	African sumac		
*Sedum rupestre**	stonecrop		
Sisyrinchium bellum	blue eyed grass		
*Sonchus asper**	spiny sowthistle		
Sotol sp.	sotol		
Stephanomeria sp.	wirelettuce		
*Tipuana tipu**	tipu tree		
Typha latifolia	broadleaf cattail		
Umbellularia californica	California bay		
*Vinca major**	periwinkle	Moderate	
*Washingtonia robusta**	Mexican fan palm	Moderate	
*Westringia fruticosa**	coast rosemary		
Yucca schidigera	Mojave yucca (ornamental)		
Birds			
Aphelocoma californica	California scrub-jay		

Table C-1: Plant and Wildlife Species Observed List

*Scientific Name**	Common Name	Cal-IPC Rating**	Special-Status Rank***
Buteo lineatus	red-shouldered hawk		
Calypte anna	Anna's hummingbird		
Catharus guttatus	hermit thrush		
Circus hudsonius	northern harrier		SSC
Corthylio calendula	ruby-crowned kinglet		
Corvus brachyrhynchos	American crow		
Corvus corax	common raven		
Dryobates nuttallii	Nuttall's woodpecker		
Geothlypis trichas	common yellowthroat		
Haemorhous mexicanus	house finch		
Leiothlypis celata	orange-crowned warbler		
*Lonchura punctulata**	scaly-breasted munia		
Melozone crissalis	California towhee		
Melospiza lincolnii	Lincoln's sparrow		
Melospiza melodia	song sparrow		
Pipilo maculatus	spotted towhee		
Polioptila californica californica	coastal California gnatcatcher		FT, SSC
Psaltriparus minimus	bushtit		
Sayornis nigricans	black phoebe		
Sayornis saya	Say's phoebe		
Selasphorus sasin	Allen's hummingbird		
Setophaga coronata auduboni	Audubon's yellow-rumped warbler		
Setophaga petechia	yellow warbler		SSC
Spinus psaltria	lesser goldfinch		
Thryomanes bewickii	Bewick's wren		
Troglodytes aedon	house wren		
Vireo huttoni	Hutton's vireo		
Zonotrichia leucophrys gambelii	Gambel's white-crowned sparrow		
*Zosterops simplex**	Swinhoe's white-eye		

* **Non-native species**

** **California Invasive Plant Council (Cal-IPC) Ratings**

High These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Watch These species have been assessed as posing a high risk of becoming invasive in the future in California.

*** **Special-Status Rank**

FT Federally Threatened

SSC Species of Special Concern – any species, subspecies, or distinct population of fish, amphibian, reptile, bird, or mammal native to California that currently satisfies one or more of the following criteria:

- is extirpated from California or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed.
- is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; or
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

Attachment D

Literature Review Results

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Tustin (3311767) OR Newport Beach (3311768) OR Laguna Beach (3311757))
 AND Taxonomic Group IS (Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Abronia villosa var. aurita chaparral sand-verbena	PDNYC010P1	None	None	G5T2?	S2	1B.1
Aphanisma blitoides aphanisma	PDCHE02010	None	None	G3G4	S2	1B.2
Astragalus hornii var. hornii Horn's milk-vetch	PDFAB0F421	None	None	GUT1	S1	1B.1
Atriplex coulteri Coulter's saltbush	PDCHE040E0	None	None	G3	S1S2	1B.2
Atriplex pacifica south coast saltscale	PDCHE041C0	None	None	G4	S2	1B.2
Atriplex parishii Parish's brittlescale	PDCHE041D0	None	None	G1G2	S1	1B.1
Atriplex serenana var. davidsonii Davidson's saltscale	PDCHE041T1	None	None	G5T1	S1	1B.2
Calochortus weedii var. intermedius intermediate mariposa-lily	PMLIL0D1J1	None	None	G3G4T2	S3	1B.2
Centromadia parryi ssp. australis southern tarplant	PDAST4R0P4	None	None	G3T2	S2	1B.1
Chaenactis glabriuscula var. orcuttiana Orcutt's pincushion	PDAST20095	None	None	G5T1T2	S1	1B.1
Chloropyron maritimum ssp. maritimum salt marsh bird's-beak	PDSCR0J0C2	Endangered	Endangered	G4?T1	S1	1B.2
Comarostaphylis diversifolia ssp. diversifolia summer holly	PDERI0B011	None	None	G3T2	S2	1B.2
Dudleya multicaulis many-stemmed dudleya	PDCRA040H0	None	None	G2	S2	1B.2
Dudleya stolonifera Laguna Beach dudleya	PDCRA040P0	Threatened	Threatened	G1	S1	1B.1
Eryngium aristulatum var. parishii San Diego button-celery	PDAPI0Z042	Endangered	Endangered	G5T1	S1	1B.1
Euphorbia misera cliff spurge	PDEUP0Q1B0	None	None	G5	S2	2B.2
Helianthus nuttallii ssp. parishii Los Angeles sunflower	PDAST4N102	None	None	G5TX	SX	1A
Horkelia cuneata var. puberula mesa horkelia	PDROS0W045	None	None	G4T1	S1	1B.1

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Isocoma menziesii var. decumbens decumbent goldenbush	PDAST57091	None	None	G3G5T2T3	S2	1B.2
Lasthenia glabrata ssp. coulteri Coulter's goldfields	PDAST5L0A1	None	None	G4T2	S2	1B.1
Lepidium virginicum var. robinsonii Robinson's pepper-grass	PDBRA1M114	None	None	G5T3	S3	4.3
Nama stenocarpa mud nama	PDHYD0A0H0	None	None	G4G5	S1S2	2B.2
Nasturtium gambelii Gambel's water cress	PDBRA270V0	Endangered	Threatened	G1	S1	1B.1
Navarretia prostrata prostrate vernal pool navarretia	PDPLM0C0Q0	None	None	G2	S2	1B.2
Nemacaulis denudata var. denudata coast woolly-heads	PDPGN0G011	None	None	G3G4T2	S2	1B.2
Orcuttia californica California Orcutt grass	PMPOA4G010	Endangered	Endangered	G1	S1	1B.1
Pentachaeta aurea ssp. allenii Allen's pentachaeta	PDAST6X021	None	None	G4T1	S1	1B.1
Quercus dumosa Nuttall's scrub oak	PDFAG050D0	None	None	G3	S3	1B.1
Senecio aphanactis chaparral ragwort	PDAST8H060	None	None	G3	S2	2B.2
Sidalcea neomexicana salt spring checkerbloom	PDMAL110J0	None	None	G4	S2	2B.2
Suaeda esteroa estuary seablite	PDCHE0P0D0	None	None	G3	S2	1B.2
Symphyotrichum defoliatum San Bernardino aster	PDASTE80C0	None	None	G2	S2	1B.2
Verbesina dissita big-leaved crownbeard	PDAST9R050	Threatened	Threatened	G1G2	S1	1B.1

Record Count: 33

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Tustin (3311767) OR Newport Beach (3311768) OR Laguna Beach (3311757))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Accipiter cooperii Cooper's hawk	ABNKC12040	None	None	G5	S4	WL
Agelaius tricolor tricolored blackbird	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC
Aimophila ruficeps canescens southern California rufous-crowned sparrow	ABPBX91091	None	None	G5T3	S3	WL
Ammodramus savannarum grasshopper sparrow	ABPBXA0020	None	None	G5	S3	SSC
Anniella stebbinsi Southern California legless lizard	ARACC01060	None	None	G3	S3	SSC
Aspidoscelis hyperythra orange-throated whiptail	ARACJ02060	None	None	G5	S2S3	WL
Athene cunicularia burrowing owl	ABNSB10010	None	None	G4	S3	SSC
Bombus crotchii Crotch bumble bee	IIHYM24480	None	None	G3G4	S1S2	
Branchinecta sandiegonensis San Diego fairy shrimp	ICBRA03060	Endangered	None	G2	S2	
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	ABPBG02095	None	None	G5T3Q	S3	SSC
Charadrius nivosus nivosus western snowy plover	ABNNB03031	Threatened	None	G3T3	S2	SSC
Choeronycteris mexicana Mexican long-tongued bat	AMACB02010	None	None	G3G4	S1	SSC
Cicindela hirticollis gravida sandy beach tiger beetle	IICOL02101	None	None	G5T2	S2	
Cicindela latesignata latesignata western beach tiger beetle	IICOL02113	None	None	G2G4T1T2	S1	
Coccyzus americanus occidentalis western yellow-billed cuckoo	ABNRB02022	Threatened	Endangered	G5T2T3	S1	
Coelus globosus globose dune beetle	IICOL4A010	None	None	G1G2	S1S2	
Coturnicops noveboracensis yellow rail	ABNME01010	None	None	G4	S1S2	SSC
Crotalus ruber red-diamond rattlesnake	ARADE02090	None	None	G4	S3	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Danaus plexippus pop. 1 monarch - California overwintering population	IILEPP2012	Candidate	None	G4T2T3	S2S3	
Elanus leucurus white-tailed kite	ABNKC06010	None	None	G5	S3S4	FP
Emys marmorata western pond turtle	ARAAD02030	None	None	G3G4	S3	SSC
Eremophila alpestris actia California horned lark	ABPAT02011	None	None	G5T4Q	S4	WL
Eucyclogobius newberryi tidewater goby	AFCQN04010	Endangered	None	G3	S3	
Eumops perotis californicus western mastiff bat	AMACD02011	None	None	G4G5T4	S3S4	SSC
Habroscelimorpha gabbii western tidal-flat tiger beetle	IICOL02080	None	None	G2G4	S1	
Icteria virens yellow-breasted chat	ABPBX24010	None	None	G5	S3	SSC
Lasiurus cinereus hoary bat	AMACC05030	None	None	G3G4	S4	
Laterallus jamaicensis coturniculus California black rail	ABNME03041	None	Threatened	G3G4T1	S1	FP
Nyctinomops macrotis big free-tailed bat	AMACD04020	None	None	G5	S3	SSC
Oncorhynchus mykiss irideus pop. 10 steelhead - southern California DPS	AFCHA0209J	Endangered	None	G5T1Q	S1	
Pandion haliaetus osprey	ABNKC01010	None	None	G5	S4	WL
Panoquina errans wandering (=saltmarsh) skipper	IILEP84030	None	None	G4G5	S2	
Passerculus sandwichensis beldingi Belding's savannah sparrow	ABPBX99015	None	Endangered	G5T3	S3	
Perognathus longimembris pacificus Pacific pocket mouse	AMAFD01042	Endangered	None	G5T1	S1	SSC
Phrynosoma blainvillii coast horned lizard	ARACF12100	None	None	G3G4	S3S4	SSC
Polioptila californica californica coastal California gnatcatcher	ABPBJ08081	Threatened	None	G4G5T3Q	S2	SSC
Rallus obsoletus levipes light-footed Ridgway's rail	ABNME05014	Endangered	Endangered	G3T1T2	S1	FP
Riparia riparia bank swallow	ABPAU08010	None	Threatened	G5	S2	
Setophaga petechia yellow warbler	ABPBX03010	None	None	G5	S3S4	SSC

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Sorex ornatus salicornicus southern California saltmarsh shrew	AMABA01104	None	None	G5T1?	S1	SSC
Spea hammondii western spadefoot	AAABF02020	None	None	G2G3	S3	SSC
Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2	FP
Streptocephalus woottoni Riverside fairy shrimp	ICBRA07010	Endangered	None	G1G2	S1S2	
Taxidea taxus American badger	AMAJF04010	None	None	G5	S3	SSC
Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040	None	None	G2	S2	
Vireo bellii pusillus least Bell's vireo	ABPBW01114	Endangered	Endangered	G5T2	S2	

Record Count: 46

Selected Elements by Scientific Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Tustin (3311767) OR Newport Beach (3311768) OR Laguna Beach (3311757))
 AND Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
Southern Coast Live Oak Riparian Forest Southern Coast Live Oak Riparian Forest	CTT61310CA	None	None	G4	S4	
Southern Coastal Salt Marsh Southern Coastal Salt Marsh	CTT52120CA	None	None	G2	S2.1	
Southern Cottonwood Willow Riparian Forest Southern Cottonwood Willow Riparian Forest	CTT61330CA	None	None	G3	S3.2	
Southern Dune Scrub Southern Dune Scrub	CTT21330CA	None	None	G1	S1.1	
Southern Foredunes Southern Foredunes	CTT21230CA	None	None	G2	S2.1	
Southern Sycamore Alder Riparian Woodland Southern Sycamore Alder Riparian Woodland	CTT62400CA	None	None	G4	S4	
Valley Needlegrass Grassland Valley Needlegrass Grassland	CTT42110CA	None	None	G3	S3.1	

Record Count: 7

California Native Plant Society Search Results

Scientific Name	Common Name	CRPR	CESA	FESA
Abronia maritima	red sand-verbena	4.2	None	None
Abronia villosa var. aurita	chaparral sand-verbena	1B.1	None	None
Aphanisma blitoides	aphanisma	1B.2	None	None
Astragalus hornii var. hornii	Horn's milk-vetch	1B.1	None	None
Atriplex coulteri	Coulter's saltbush	1B.2	None	None
Atriplex pacifica	south coast saltscale	1B.2	None	None
Atriplex parishii	Parish's brittlescale	1B.1	None	None
Atriplex serenana var. davidsonii	Davidson's saltscale	1B.2	None	None
Calochortus catalinae	Catalina mariposa lily	4.2	None	None
Calochortus weedii var. intermedius	intermediate mariposa-lily	1B.2	None	None
Camissoniopsis lewisii	Lewis' evening-primrose	3	None	None
Centromadia parryi ssp. australis	southern tarplant	1B.1	None	None
Chaenactis glabriuscula var. orcuttiana	Orcutt's pincushion	1B.1	None	None
Chloropyron maritimum ssp. maritimum	salt marsh bird's-beak	1B.2	CE	FE
Cistanthe maritima	seaside cistanthe	4.2	None	None
Comarostaphylis diversifolia ssp. diversifolia	summer holly	1B.2	None	None
Convolvulus simulans	small-flowered morning-glory	4.2	None	None
Deinandra paniculata	paniculate tarplant	4.2	None	None
Dichondra occidentalis	western dichondra	4.2	None	None
Dudleya multicaulis	many-stemmed dudleya	1B.2	None	None
Dudleya stolonifera	Laguna Beach dudleya	1B.1	CT	FT
Eleocharis parvula	small spikerush	4.3	None	None
Eryngium aristulatum var. parishii	San Diego button-celery	1B.1	CE	FE
Euphorbia misera	cliff spurge	2B.2	None	None
Harpagonella palmeri	Palmer's grapplinghook	4.2	None	None
Helianthus nuttallii ssp. parishii	Los Angeles sunflower	1A	None	None
Hordeum intercedens	vernal barley	3.2	None	None
Horkelia cuneata var. puberula	mesa horkelia	1B.1	None	None
Isocoma menziesii var. decumbens	decumbent goldenbush	1B.2	None	None
Juglans californica	Southern California black walnut	4.2	None	None
Juncus acutus ssp. leopoldii	southwestern spiny rush	4.2	None	None
Lasthenia glabrata ssp. coulteri	Coulter's goldfields	1B.1	None	None
Lepidium virginicum var. robinsonii	Robinson's pepper-grass	4.3	None	None
Lycium californicum	California box-thorn	4.2	None	None
Malacothrix saxatilis var. saxatilis	cliff malacothrix	4.2	None	None
Nama stenocarpa	mud nama	2B.2	None	None
Nasturtium gambelii	Gambel's water cress	1B.1	CT	FE
Navarretia prostrata	prostrate vernal pool navarretia	1B.2	None	None
Nemacaulis denudata var. denudata	coast woolly-heads	1B.2	None	None
Orcuttia californica	California Orcutt grass	1B.1	CE	FE
Pentachaeta aurea ssp. allenii	Allen's pentachaeta	1B.1	None	None

Phacelia ramosissima var. austrolitoralis	south coast branching phacelia	3.2	None	None
Quercus dumosa	Nuttall's scrub oak	1B.1	None	None
Senecio aphanactis	chaparral ragwort	2B.2	None	None
Sidalcea neomexicana	salt spring checkerbloom	2B.2	None	None
Suaeda esteroa	estuary seablite	1B.2	None	None
Suaeda taxifolia	woolly seablite	4.2	None	None
Symphyotrichum defoliatum	San Bernardino aster	1B.2	None	None
Verbesina dissita	big-leaved crownbeard	1B.1	CT	FT

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Orange County, California

Local office

Carlsbad Fish And Wildlife Office

(760) 431-9440
(760) 431-5901

2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385

http://www.fws.gov/carlsbad/

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS

Pacific Pocket Mouse Perognathus longimembris pacificus — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/8080

Birds

NAME	STATUS
California Least Tern Sterna antillarum browni Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/8104	Endangered
Coastal California Gnatcatcher Polioptila californica californica Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8178	Threatened
Least Bell's Vireo Vireo bellii pusillus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Clapper Rail Rallus longirostris levipes Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6035	Endangered
Southwestern Willow Flycatcher Empidonax traillii extimus Wherever found There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/6749	Endangered
Western Snowy Plover Charadrius nivosus nivosus There is **final** critical habitat for this species. The location of the critical habitat is not available. https://ecos.fws.gov/ecp/species/8035	Threatened

Insects

NAME	STATUS

Monarch Butterfly Danaus plexippus | Candidate

Wherever found

No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/9743

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php
- Measures for avoiding and minimizing impacts to birds http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php
- Nationwide conservation measures for birds http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
Allen's Hummingbird Selasphorus sasin This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9637	Breeds Feb 1 to Jul 15
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Black Skimmer Rynchops niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/5234	Breeds May 20 to Sep 15
Black Swift Cypseloides niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8878	Breeds Jun 15 to Sep 10
Black Tern Chlidonias niger This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20

California Thrasher Toxostoma redivivum | Breeds Jan 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Clark's Grebe Aechmophorus clarkii | Breeds Jun 1 to Aug 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Common Yellowthroat Geothlypis trichas sinuosa | Breeds May 20 to Jul 31
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/2084

Golden Eagle Aquila chrysaetos | Breeds Jan 1 to Aug 31
This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Gull-billed Tern Gelochelidon nilotica | Breeds May 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9501

Lawrence's Goldfinch Carduelis lawrencei | Breeds Mar 20 to Sep 20
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Marbled Godwit Limosa fedoa | Breeds elsewhere
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9481

Nuttall's Woodpecker Picoides nuttallii | Breeds Apr 1 to Jul 20
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus | Breeds Mar 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Olive-sided Flycatcher Contopus cooperi — Breeds May 20 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3914

Short-billed Dowitcher Limnodromus griseus — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9480

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Willet Tringa semipalmata — Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any

week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

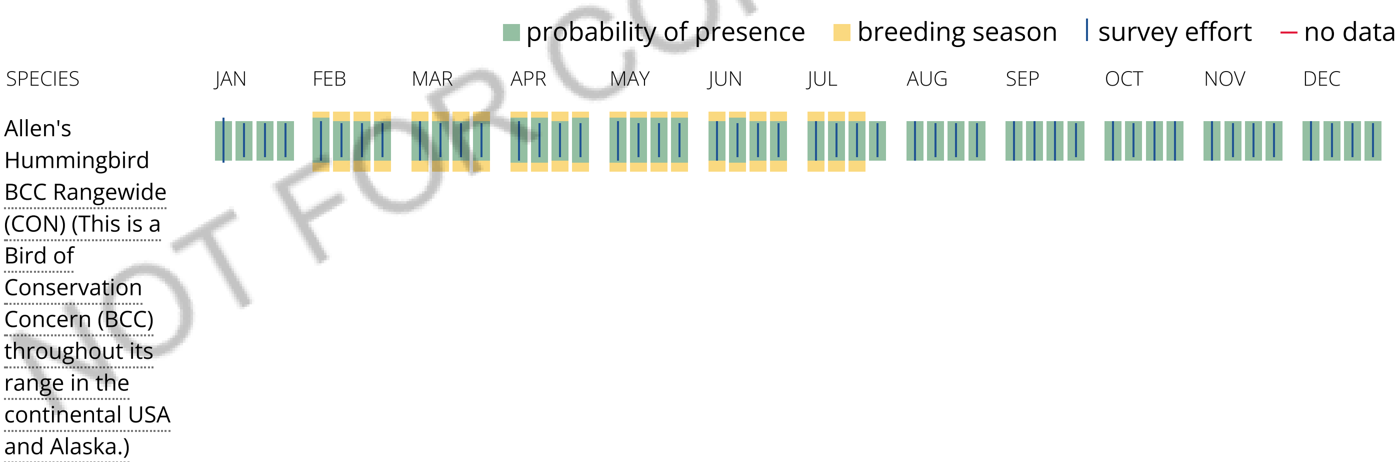
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

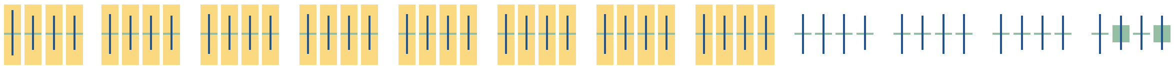
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

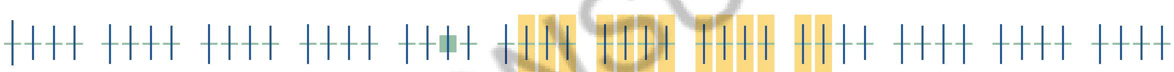


Bald Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



Black Skimmer
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

Black Swift
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Black Tern
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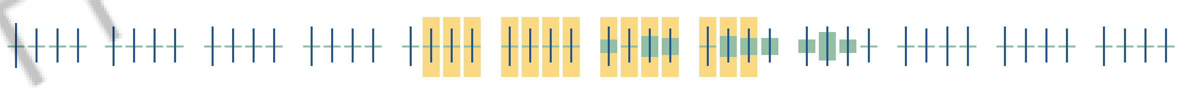
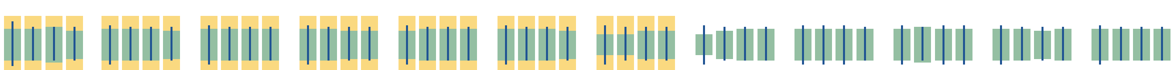
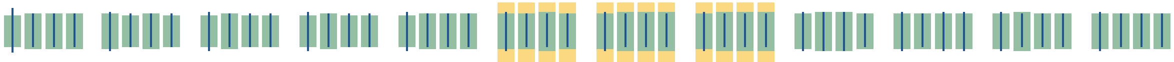


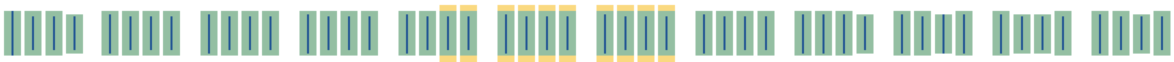
California Thrasher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



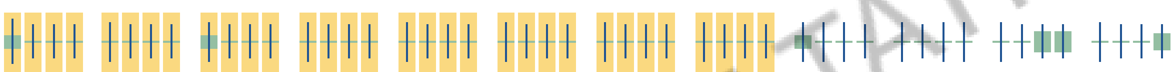
Clark's Grebe
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



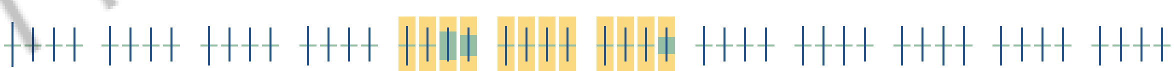
Common Yellowthroat
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



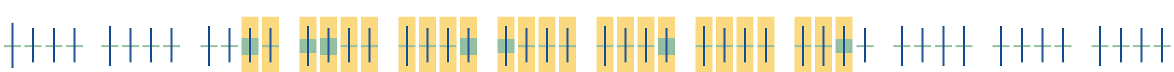
Golden Eagle
Non-BCC Vulnerable (This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.)



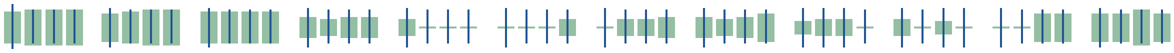
Gull-billed Tern
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Lawrence's Goldfinch
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

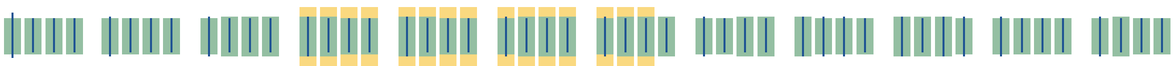


Marbled Godwit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)

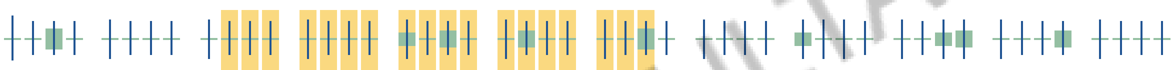


SPECIES JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

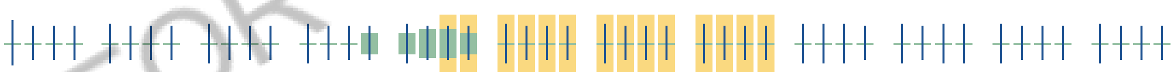
Nuttall's Woodpecker
BCC - BCR (This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA)



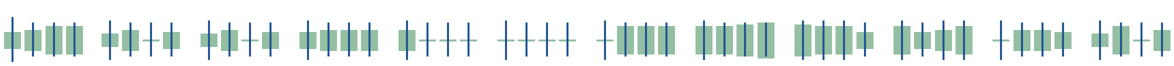
Oak Titmouse
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



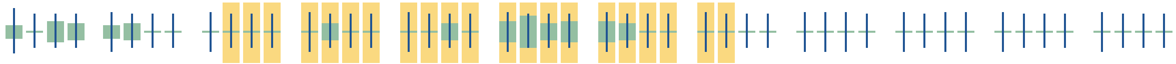
Olive-sided Flycatcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



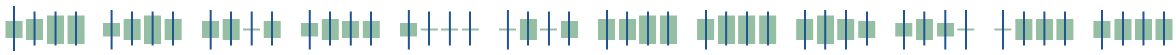
Short-billed Dowitcher
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



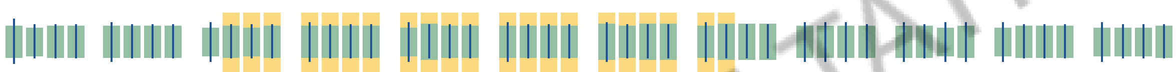
Tricolored Blackbird
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Willet
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Wrentit
BCC Rangewide (CON) (This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.)



Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets .

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: The Cornell Lab of Ornithology All About Birds Bird Guide, or (if you are unsuccessful in locating the bird of interest there), the Cornell Lab of Ornithology Neotropical Birds guide. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

THERE ARE NO KNOWN WETLANDS AT THIS LOCATION.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Attachment E

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APPENDIX C

Greenhouse Gas Assessment

Greenhouse Gas Emissions Assessment
Falling Leaves Foundation
Medical Innovation Building Project
University of California, Irvine

Prepared by:

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Orange, California 92868
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January 2022

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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) Falling Leaves Foundation Medical Innovation Building 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 Project site is in UCI's West Campus, northwest of the Michael Drake Drive and Health Sciences Road 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 Health Science Road.

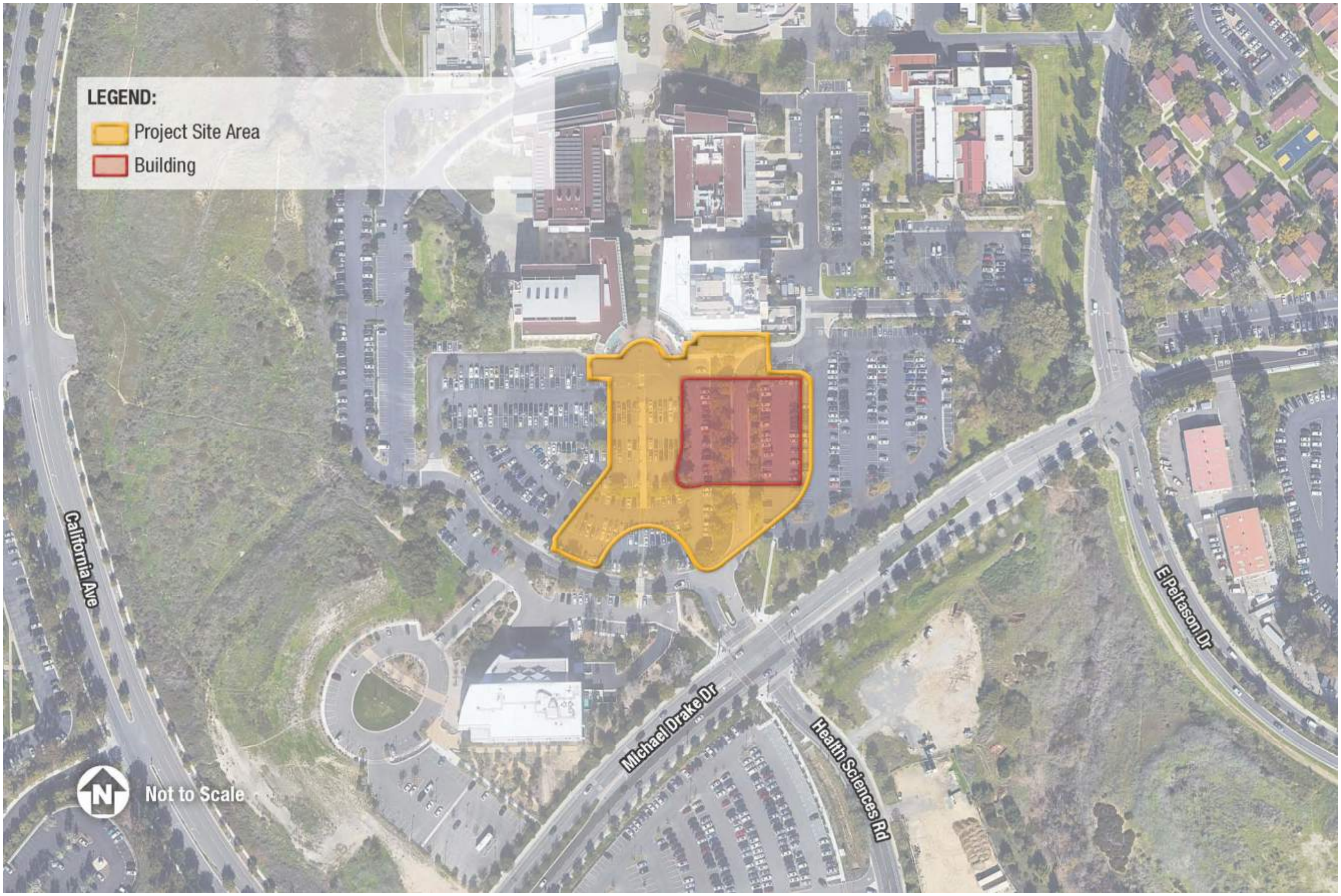
1.2 Project Description

The University of California, Irvine (UCI) is proposing the Falling Leaves Foundation Medical Innovation Building project, which would demolish portions of the existing surface parking Lots 82 and 83 and would construct an approximately 250,000-gross-square-foot (GSF) facility within the UCI West Campus to support collaborative, interdisciplinary, and innovative research in medicine and other health sciences disciplines; see **Exhibit 3: Conceptual Site Plan**. Proposed uses to be constructed within the new facility includes academic, laboratory, research, administrative, and support space. Additional improvements include realignment of the existing Health Sciences Road, landscaping, and lighting. Surrounding uses to the project site include Gross Hall, Hewitt Hall, and surface parking to the north; Gavin Herbert Eye Institute and Michael Drake Drive to the south; West Peltason Drive to the east; and surface parking to the west.

Project construction is anticipated to start in October 2022 and end by March 2025. Building occupancy would occur by summer of 2025 before the start of the new school year. Earthwork during project construction would include approximately 15,500 cubic yards (CY) of cut and 1,500 CY of fill with an approximate net export of 14,000 CY.

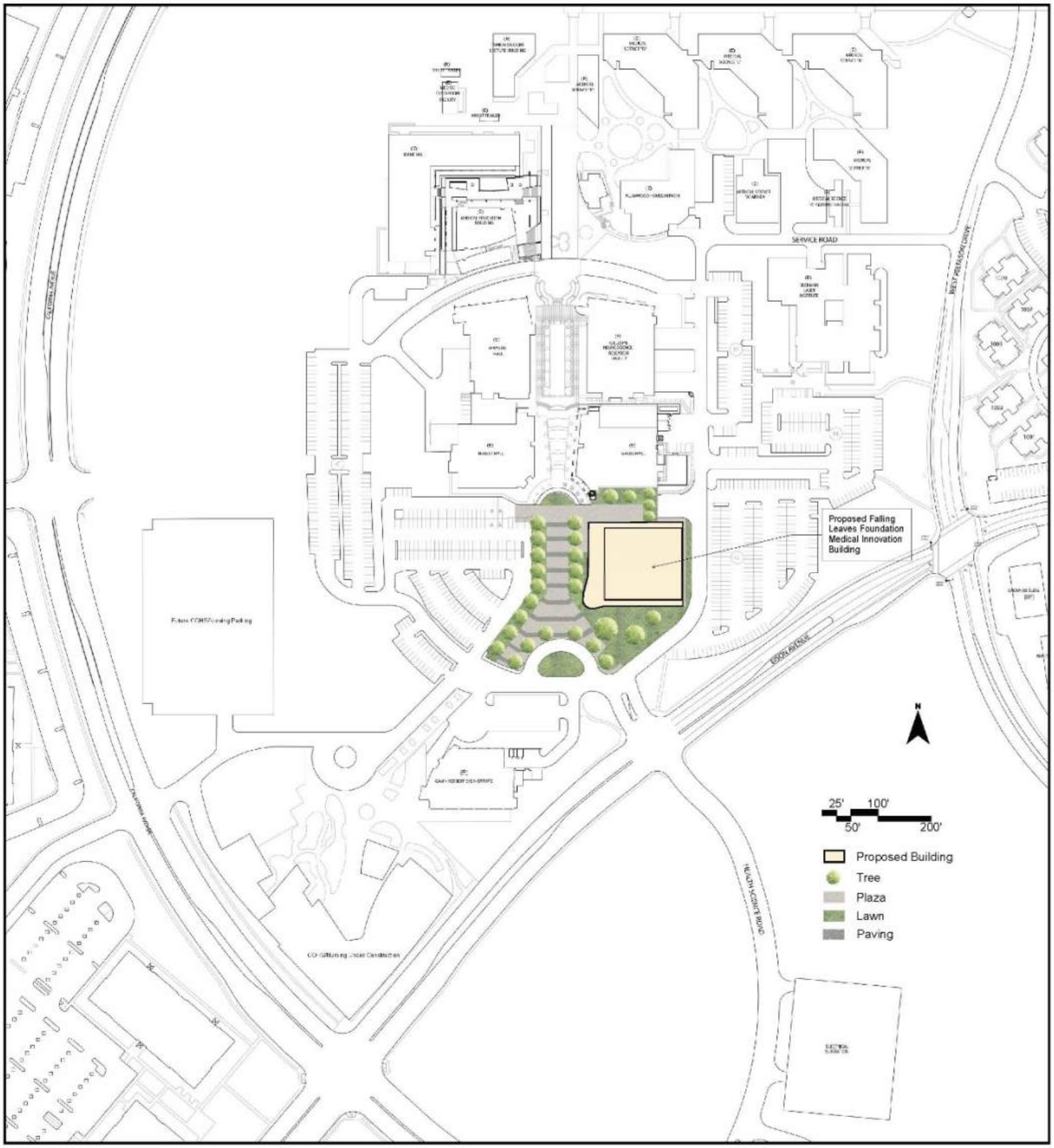
Exhibit 1: Regional Vicinity

Exhibit 2: Site Vicinity



Source: Google Earth, 2022.

Exhibit 3: Conceptual Site Plan



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.

In 2018, the President and the 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 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 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. The EPA is currently reconsidering the SAFE rule pursuant to Presidential Executive Order 13390 issued on January 20, 2021.

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.

- 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

[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.

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.

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. A new CARB Scoping Plan will be proposed in 2022.

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.

[4] California Air Resources Board, *California's 2017 Climate Change Scoping Plan,* https://www.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf. Accessed January 6, 2022.

[5] Ibid.

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. In 2019 the EPA published the SAFE Rule that revoked California's waiver. However, the EPA is currently reconsidering the SAFE rule pursuant to Presidential Executive Order 13390.

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.

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. 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 Significance Criteria

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)).

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.

On September 28, 2010, the SCAQMD recommended an interim screening level numeric "bright-line" threshold of 3,000 metric tons per year of CO_2e for non-industrial land uses. These efficiency-based thresholds were developed as part of the SCAQMD GHG CEQA Significance Threshold Working Group. This working group was formed to assist SCAQMD's efforts to develop a GHG significance threshold and is composed of a wide variety of stakeholders including the State Office of Planning and Research, CARB, the Attorney General's Office, a variety of city and county planning departments in the SCAB, various utilities such as sanitation and power companies throughout the SCAB, industry groups, and environmental and professional organizations. The numeric "bright line" was developed to be consistent with CEQA requirements for developing significance thresholds, are supported by substantial evidence, and provides guidance to CEQA practitioners in determining whether GHG emissions from a proposed project are significant.

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]

[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

4.2 Methodology

Global climate change is, by definition, a cumulative impact of GHG emissions. Therefore, there is no project-level analysis. The baseline against which to compare potential impacts of the Project includes the natural and anthropogenic drivers of global climate change, including world-wide GHG emissions from human activities which almost doubled between 1970 and 2010 from approximately 27 gigatonnes (Gt) of CO_2/year to nearly 49 $GtCO_2$/year.[7] As such, the geographic extent of climate change and GHG emissions' cumulative impact discussion is worldwide.

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**. 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. For construction, CalEEMod calculates emissions from off-road equipment usage and on-road vehicle travel associated with haul, delivery, and construction worker trips. GHG emissions during construction were forecasted based on the proposed construction schedule and applying the mobile-source and fugitive dust emissions factors derived from CalEEMod.

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.

Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are not included in CalEEMod. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations. Benefits of the water conservation regulations are applied in the CalEEMod mitigation component. Adjustments were also made for project design features that would reduce GHG emissions. The proposed project would also be constructed in conformance with CALGreen, which requires high-efficiency water fixtures for indoor plumbing and water efficient irrigation systems.

The mitigated output from CalEEMod show reductions from existing regulatory requirements and project design features that are termed "mitigation" within the model; however, those modeling components associated with locational measures and compliance with existing regulations are not considered mitigation under CEQA, but rather are treated as project design features.

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.

[7] Intergovernmental Panel on Climate Change, *Climate Change 2014 Mitigation of Climate Change Working Group III Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, 2014.

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?

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 29 months. The Project is anticipated to require approximately 15,500 CY of excavation with approximately 14,000 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	$MTCO_2e/yr$
Construction Year 1 (2022)	115.23
Construction Year 2 (2023)	503.57
Construction Year 3 (2024)	554.57
Construction Year 4 (2025)	58.83
Total Construction Emissions	1,229.20
30-Year Amortized Construction	40.97

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 1,229.20 $MTCO_2e$ of GHG emissions over the course of construction. Construction GHG emissions are typically summed and amortized over a 30-year period, then added to the operational emissions[8]. The amortized Project emissions would be 40.97 $MTCO_2e$ per year. Once construction is complete, the generation of construction-related GHG emissions would cease.

Operational Greenhouse Gas Emissions

Operational 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

[8] The 30-year amortization period is based on the 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**. [9]

Table 3: Project Greenhouse Gas Emissions	
Emissions Source	**$MTCO_2e$ per Year**
Construction Amortized Over 30 Years	40.97
Area Source	<0.01
Energy	647.16
Mobile	596.53
Waste	4.80
Water	364.33
Total	**1,653.80**
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 1,653.80 $MTCO_2e$ 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.

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.

[9] 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.

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. These areas of policy are applicable to new buildings and major renovations on the UCI campus.

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. Although the Policy on Sustainable Practice includes a goal of LEED “Silver” standards, the Project has a goal to achieve “Platinum”. The Project would also not use natural gas for space and water heating if feasible. Accordingly, the Project will exceed the energy efficiency standards in the 2019 California Building Standards Code by at least 20 percent.

UCI’s Sustainable Transportation Program utilizes various Transportation Demand Management (TDM) measures and was created with the goal to reduce the total number of vehicle trips made to the campus by faculty, staff, and students and reduce commute emissions. The Project would not eliminate or reduce any existing TDM measures offered by UCI’s Transportation and Distribution Service. Students, faculty, and staff that access the Project would be eligible to utilize the TDM services provided by the UCI Transportation and Distribution Service.

The Project would be constructed within the West Campus, adjacent to existing UCI buildings and facilities, including Gross Hall, Hewitt Hall, and the Gavin Herbert Eye Institute. As the Project is within a developed area of the campus, it would benefit from the surrounding multimodal transportation systems, including sidewalks/walking trails, bicycle infrastructure, municipal bus service, and campus shuttles. The Project would connect to a campus-wide network of bike/pedestrian trail system. Additionally, UCI has replaced its diesel bus fleet with an all-electric fleet, to reduce GHG emissions. The proposed Project would Project would benefit from the implementation of an optimized fleet, which would also server the Project site.

The Project would not conflict with any of the policy’s sustainable practices, including campus-wide clean energy, energy efficiency, and renewable energy, and sustainable transportation. As discussed above, the Project is subject to the practices in the UC Sustainable Practices Policy and the UCI CAP. The Project would be required to comply with the GHG reduction efforts outlined in the CAP and all of UCI’s sustainability programs, including green building design, renewable energy, and energy efficiency measures, among others, to reduce its carbon footprint. The Project’s GHG emissions (1,653.80 $MTCO_2e$ 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.

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. Southern California Association of Governments, *Regional Transportation Plan/Sustainable Communities Strategy*, 2016.
6. South Coast Air Quality Management District, *Minutes for the GHG CEQA Significance Threshold Stakeholder Working Group #13*, 2009.
7. Stantec, *Falling Leaves Medical Building Project Trip Generation Summary,* December 2021.
8. University of California, *Policy of Sustainable Practices*, 2018.
9. University of California, Irvine, *Climate Action Plan*, 2016.
10. U.S. EPA, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2017*, 2019.
11. U.S. EPA, *Methane and Nitrous Oxide Emission from Natural Sources*, 2010.
12. U.S. EPA, *Overview of Greenhouse Gases*, 2018.

Appendix A

Greenhouse Gas Emissions Data

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

UCI Fallen Leaves

South Coast Air Basin, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	0.63	Acre	0.63	27,442.80	0
City Park	0.94	Acre	0.94	40,946.40	0
Research & Development	250.00	1000sqft	5.74	250,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	8			**Operational Year**	2025
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 -

Construction Phase - Construction from oct 2022 to march 2025

Grading -

Demolition -

Vehicle Trips - Calcuated using the trip gen

Construction Off-road Equipment Mitigation - SQAMD rules

Water Mitigation -

Waste Mitigation -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	20.00	35.00
tblConstructionPhase	NumDays	10.00	40.00
tblConstructionPhase	NumDays	20.00	60.00
tblConstructionPhase	NumDays	230.00	465.00
tblConstructionPhase	NumDays	20.00	66.00
tblConstructionPhase	PhaseEndDate	10/28/2022	11/18/2022
tblConstructionPhase	PhaseEndDate	11/11/2022	1/13/2023
tblConstructionPhase	PhaseEndDate	12/9/2022	4/7/2023
tblConstructionPhase	PhaseEndDate	10/27/2023	1/17/2025
tblConstructionPhase	PhaseEndDate	11/24/2023	2/4/2025
tblConstructionPhase	PhaseEndDate	12/22/2023	3/7/2025
tblConstructionPhase	PhaseStartDate	10/29/2022	11/21/2022
tblConstructionPhase	PhaseStartDate	11/12/2022	1/16/2023
tblConstructionPhase	PhaseStartDate	12/10/2022	4/10/2023
tblConstructionPhase	PhaseStartDate	10/28/2023	1/8/2025
tblConstructionPhase	PhaseStartDate	11/25/2023	12/6/2024
tblGrading	MaterialExported	0.00	14,500.00
tblGrading	MaterialImported	0.00	1,000.00
tblVehicleTrips	CC_TTP	48.00	0.00
tblVehicleTrips	CNW_TTP	19.00	0.00
tblVehicleTrips	CW_TTP	33.00	0.00
tblVehicleTrips	DV_TP	28.00	0.00
tblVehicleTrips	PB_TP	6.00	0.00
tblVehicleTrips	PR_TP	66.00	0.00
tblVehicleTrips	ST_TR	1.96	0.00

tblVehicleTrips	ST_TR	1.90	2.21
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	1.11	2.21
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	11.26	2.21

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.0955	0.9478	0.6747	1.3000e-003	0.3659	0.0460	0.4119	0.1626	0.0425	0.2051	0.0000	114.3654	114.3654	0.0331	1.3000e-004	115.2299
2023	0.2531	2.2580	2.5024	5.5600e-003	0.4853	0.0977	0.5830	0.1966	0.0914	0.2879	0.0000	496.8176	496.8176	0.0887	0.0152	503.5663
2024	0.5605	2.0657	2.6691	6.1000e-003	0.2018	0.0832	0.2849	0.0546	0.0783	0.1328	0.0000	546.5148	546.5148	0.0793	0.0204	554.5764
2025	0.8718	0.2100	0.3377	6.6000e-004	0.0173	9.0000e-003	0.0263	4.6500e-003	8.4500e-003	0.0131	0.0000	58.2237	58.2237	0.0108	1.1200e-003	58.8270
Maximum	**0.8718**	**2.2580**	**2.6691**	**6.1000e-003**	**0.4853**	**0.0977**	**0.5830**	**0.1966**	**0.0914**	**0.2879**	**0.0000**	**546.5148**	**546.5148**	**0.0887**	**0.0204**	**554.5764**

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	0.0955	0.9478	0.6747	1.3000e-003	0.1595	0.0460	0.2055	0.0703	0.0425	0.1128	0.0000	114.3653	114.3653	0.0331	1.3000e-004	115.2298
2023	0.2531	2.2580	2.5024	5.5600e-003	0.2862	0.0977	0.3839	0.1055	0.0914	0.1969	0.0000	496.8172	496.8172	0.0887	0.0152	503.5660
2024	0.5605	2.0657	2.6691	6.1000e-003	0.1917	0.0832	0.2749	0.0521	0.0783	0.1304	0.0000	546.5144	546.5144	0.0793	0.0204	554.5761
2025	0.8718	0.2100	0.3377	6.6000e-004	0.0165	9.0000e-003	0.0255	4.4400e-003	8.4500e-003	0.0129	0.0000	58.2236	58.2236	0.0108	1.1200e-003	58.8270
Maximum	**0.8718**	**2.2580**	**2.6691**	**6.1000e-003**	**0.2862**	**0.0977**	**0.3839**	**0.1055**	**0.0914**	**0.1969**	**0.0000**	**546.5144**	**546.5144**	**0.0887**	**0.0204**	**554.5761**

	ROG	NOx	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**	**38.91**	**0.00**	**31.89**	**44.46**	**0.00**	**29.12**	**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	**10-3-2022**	**1-2-2023**	1.0317	1.0317
2	**1-3-2023**	**4-2-2023**	0.6616	0.6616
3	**4-3-2023**	**7-2-2023**	0.5900	0.5900
4	**7-3-2023**	**10-2-2023**	0.6077	0.6077
5	**10-3-2023**	**1-2-2024**	0.6112	0.6112
6	**1-3-2024**	**4-2-2024**	0.5700	0.5700
7	**4-3-2024**	**7-2-2024**	0.5658	0.5658
8	**7-3-2024**	**10-2-2024**	0.5721	0.5721

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

9	**10-3-2024**	**1-2-2025**	0.9429	0.9429
10	**1-3-2025**	**4-2-2025**	1.0214	1.0214
		Highest	1.0317	1.0317

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	1.0221	3.0000e-005	3.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2400e-003	6.2400e-003	2.0000e-005	0.0000	6.6500e-003
Energy	0.0280	0.2544	0.2137	1.5300e-003		0.0193	0.0193		0.0193	0.0193	0.0000	643.6201	643.6201	0.0363	8.8300e-003	647.1575
Mobile	0.2722	0.3219	2.8014	6.3500e-003	0.7027	4.6000e-003	0.7073	0.1875	4.2800e-003	0.1918	0.0000	587.8734	587.8734	0.0381	0.0259	596.5318
Waste						0.0000	0.0000		0.0000	0.0000	3.8731	0.0000	3.8731	0.2289	0.0000	9.5954
Water						0.0000	0.0000		0.0000	0.0000	38.9980	286.0637	325.0616	4.0296	0.0975	454.8581
Total	**1.3223**	**0.5764**	**3.0183**	**7.8800e-003**	**0.7027**	**0.0240**	**0.7266**	**0.1875**	**0.0236**	**0.2112**	**42.8710**	**1,517.5634**	**1,560.4344**	**4.3329**	**0.1322**	**1,708.1493**

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	1.0221	3.0000e-005	3.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2400e-003	6.2400e-003	2.0000e-005	0.0000	6.6500e-003
Energy	0.0280	0.2544	0.2137	1.5300e-003		0.0193	0.0193		0.0193	0.0193	0.0000	643.6201	643.6201	0.0363	8.8300e-003	647.1575
Mobile	0.2722	0.3219	2.8014	6.3500e-003	0.7027	4.6000e-003	0.7073	0.1875	4.2800e-003	0.1918	0.0000	587.8734	587.8734	0.0381	0.0259	596.5318
Waste						0.0000	0.0000		0.0000	0.0000	1.9365	0.0000	1.9365	0.1145	0.0000	4.7977
Water						0.0000	0.0000		0.0000	0.0000	31.1984	229.2923	260.4906	3.2237	0.0780	364.3301
Total	**1.3223**	**0.5764**	**3.0183**	**7.8800e-003**	**0.7027**	**0.0240**	**0.7266**	**0.1875**	**0.0236**	**0.2112**	**33.1349**	**1,460.7920**	**1,493.9269**	**3.4126**	**0.1127**	**1,612.8236**

	ROG	NOx	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**	**22.71**	**3.74**	**4.26**	**21.24**	**14.74**	**5.58**

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	10/3/2022	11/18/2022	5	35	
2	Site Preparation	Site Preparation	11/21/2022	1/13/2023	5	40	
3	Grading	Grading	1/16/2023	4/7/2023	5	60	

4	Building Construction	Building Construction	4/10/2023	1/17/2025	5	465	
5	Paving	Paving	1/8/2025	2/4/2025	5	20	
6	Architectural Coating	Architectural Coating	12/6/2024	3/7/2025	5	66	

Acres of Grading (Site Preparation Phase): 60

Acres of Grading (Grading Phase): 60

Acres of Paving: 0.63

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 375,000; Non-Residential Outdoor: 125,000; Striped Parking Area: 1,647 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	1	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
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
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Building Construction	Welders		1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	109.00	52.00	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	22.00	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

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					0.0573	0.0000	0.0573	8.6700e-003	0.0000	8.6700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0462	0.4501	0.3604	6.8000e-004		0.0218	0.0218		0.0202	0.0202	0.0000	59.4829	59.4829	0.0167	0.0000	59.9006
Total	**0.0462**	**0.4501**	**0.3604**	**6.8000e-004**	**0.0573**	**0.0218**	**0.0790**	**8.6700e-003**	**0.0202**	**0.0289**	**0.0000**	**59.4829**	**59.4829**	**0.0167**	**0.0000**	**59.9006**

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	8.8000e-004	7.1000e-004	9.2900e-003	3.0000e-005	2.8800e-003	2.0000e-005	2.9000e-003	7.6000e-004	2.0000e-005	7.8000e-004	0.0000	2.3285	2.3285	6.0000e-005	6.0000e-005	2.3488
Total	**8.8000e-004**	**7.1000e-004**	**9.2900e-003**	**3.0000e-005**	**2.8800e-003**	**2.0000e-005**	**2.9000e-003**	**7.6000e-004**	**2.0000e-005**	**7.8000e-004**	**0.0000**	**2.3285**	**2.3285**	**6.0000e-005**	**6.0000e-005**	**2.3488**

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					0.0245	0.0000	0.0245	3.7100e-003	0.0000	3.7100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0462	0.4501	0.3604	6.8000e-004		0.0218	0.0218		0.0202	0.0202	0.0000	59.4828	59.4828	0.0167	0.0000	59.9005
Total	**0.0462**	**0.4501**	**0.3604**	**6.8000e-004**	**0.0245**	**0.0218**	**0.0462**	**3.7100e-003**	**0.0202**	**0.0239**	**0.0000**	**59.4828**	**59.4828**	**0.0167**	**0.0000**	**59.9005**

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	8.8000e-004	7.1000e-004	9.2900e-003	3.0000e-005	2.7300e-003	2.0000e-005	2.7500e-003	7.3000e-004	2.0000e-005	7.4000e-004	0.0000	2.3285	2.3285	6.0000e-005	6.0000e-005	2.3488
Total	**8.8000e-004**	**7.1000e-004**	**9.2900e-003**	**3.0000e-005**	**2.7300e-003**	**2.0000e-005**	**2.7500e-003**	**7.3000e-004**	**2.0000e-005**	**7.4000e-004**	**0.0000**	**2.3285**	**2.3285**	**6.0000e-005**	**6.0000e-005**	**2.3488**

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					0.3028	0.0000	0.3028	0.1524	0.0000	0.1524	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0476	0.4963	0.2955	5.7000e-004		0.0242	0.0242		0.0223	0.0223	0.0000	50.1591	50.1591	0.0162	0.0000	50.5647
Total	**0.0476**	**0.4963**	**0.2955**	**5.7000e-004**	**0.3028**	**0.0242**	**0.3270**	**0.1524**	**0.0223**	**0.1747**	**0.0000**	**50.1591**	**50.1591**	**0.0162**	**0.0000**	**50.5647**

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	9.0000e-004	7.3000e-004	9.5500e-003	3.0000e-005	2.9600e-003	2.0000e-005	2.9800e-003	7.9000e-004	2.0000e-005	8.0000e-004	0.0000	2.3950	2.3950	7.0000e-005	6.0000e-005	2.4159
Total	**9.0000e-004**	**7.3000e-004**	**9.5500e-003**	**3.0000e-005**	**2.9600e-003**	**2.0000e-005**	**2.9800e-003**	**7.9000e-004**	**2.0000e-005**	**8.0000e-004**	**0.0000**	**2.3950**	**2.3950**	**7.0000e-005**	**6.0000e-005**	**2.4159**

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					0.1295	0.0000	0.1295	0.0652	0.0000	0.0652	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0476	0.4963	0.2955	5.7000e-004		0.0242	0.0242		0.0223	0.0223	0.0000	50.1590	50.1590	0.0162	0.0000	50.5646
Total	**0.0476**	**0.4963**	**0.2955**	**5.7000e-004**	**0.1295**	**0.0242**	**0.1536**	**0.0652**	**0.0223**	**0.0874**	**0.0000**	**50.1590**	**50.1590**	**0.0162**	**0.0000**	**50.5646**

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	9.0000e-004	7.3000e-004	9.5500e-003	3.0000e-005	2.8100e-003	2.0000e-005	2.8300e-003	7.5000e-004	2.0000e-005	7.7000e-004	0.0000	2.3950	2.3950	7.0000e-005	6.0000e-005	2.4159
Total	**9.0000e-004**	**7.3000e-004**	**9.5500e-003**	**3.0000e-005**	**2.8100e-003**	**2.0000e-005**	**2.8300e-003**	**7.5000e-004**	**2.0000e-005**	**7.7000e-004**	**0.0000**	**2.3950**	**2.3950**	**7.0000e-005**	**6.0000e-005**	**2.4159**

3.3 Site Preparation - 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					
Fugitive Dust					0.1222	0.0000	0.1222	0.0531	0.0000	0.0531	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0133	0.1376	0.0912	1.9000e-004		6.3300e-003	6.3300e-003		5.8200e-003	5.8200e-003	0.0000	16.7254	16.7254	5.4100e-003	0.0000	16.8606
Total	**0.0133**	**0.1376**	**0.0912**	**1.9000e-004**	**0.1222**	**6.3300e-003**	**0.1285**	**0.0531**	**5.8200e-003**	**0.0589**	**0.0000**	**16.7254**	**16.7254**	**5.4100e-003**	**0.0000**	**16.8606**

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	2.8000e-004	2.2000e-004	2.9300e-003	1.0000e-005	9.9000e-004	1.0000e-005	9.9000e-004	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.7727	0.7727	2.0000e-005	2.0000e-005	0.7791
Total	**2.8000e-004**	**2.2000e-004**	**2.9300e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**9.9000e-004**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.7727**	**0.7727**	**2.0000e-005**	**2.0000e-005**	**0.7791**

3.3 Site Preparation - 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					
Fugitive Dust					0.0522	0.0000	0.0522	0.0227	0.0000	0.0227	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0133	0.1376	0.0912	1.9000e-004		6.3300e-003	6.3300e-003		5.8200e-003	5.8200e-003	0.0000	16.7253	16.7253	5.4100e-003	0.0000	16.8606
Total	**0.0133**	**0.1376**	**0.0912**	**1.9000e-004**	**0.0522**	**6.3300e-003**	**0.0586**	**0.0227**	**5.8200e-003**	**0.0285**	**0.0000**	**16.7253**	**16.7253**	**5.4100e-003**	**0.0000**	**16.8606**

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	2.8000e-004	2.2000e-004	2.9300e-003	1.0000e-005	9.4000e-004	1.0000e-005	9.4000e-004	2.5000e-004	1.0000e-005	2.5000e-004	0.0000	0.7727	0.7727	2.0000e-005	2.0000e-005	0.7791
Total	**2.8000e-004**	**2.2000e-004**	**2.9300e-003**	**1.0000e-005**	**9.4000e-004**	**1.0000e-005**	**9.4000e-004**	**2.5000e-004**	**1.0000e-005**	**2.5000e-004**	**0.0000**	**0.7727**	**0.7727**	**2.0000e-005**	**2.0000e-005**	**0.7791**

3.4 Grading - 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					
Fugitive Dust					0.2125	0.0000	0.2125	0.1027	0.0000	0.1027	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0513	0.5381	0.4425	8.9000e-004		0.0233	0.0233		0.0214	0.0214	0.0000	78.1818	78.1818	0.0253	0.0000	78.8140
Total	**0.0513**	**0.5381**	**0.4425**	**8.9000e-004**	**0.2125**	**0.0233**	**0.2357**	**0.1027**	**0.0214**	**0.1241**	**0.0000**	**78.1818**	**78.1818**	**0.0253**	**0.0000**	**78.8140**

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	1.4000e-003	1.0800e-003	0.0147	4.0000e-005	4.9400e-003	3.0000e-005	4.9700e-003	1.3100e-003	3.0000e-005	1.3400e-003	0.0000	3.8634	3.8634	1.0000e-004	1.0000e-004	3.8955
Total	**1.4000e-003**	**1.0800e-003**	**0.0147**	**4.0000e-005**	**4.9400e-003**	**3.0000e-005**	**4.9700e-003**	**1.3100e-003**	**3.0000e-005**	**1.3400e-003**	**0.0000**	**3.8634**	**3.8634**	**1.0000e-004**	**1.0000e-004**	**3.8955**

3.4 Grading - 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					
Fugitive Dust					0.0908	0.0000	0.0908	0.0439	0.0000	0.0439	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0513	0.5381	0.4425	8.9000e-004		0.0233	0.0233		0.0214	0.0214	0.0000	78.1818	78.1818	0.0253	0.0000	78.8139
Total	**0.0513**	**0.5381**	**0.4425**	**8.9000e-004**	**0.0908**	**0.0233**	**0.1141**	**0.0439**	**0.0214**	**0.0653**	**0.0000**	**78.1818**	**78.1818**	**0.0253**	**0.0000**	**78.8139**

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	1.4000e-003	1.0800e-003	0.0147	4.0000e-005	4.6800e-003	3.0000e-005	4.7100e-003	1.2500e-003	3.0000e-005	1.2700e-003	0.0000	3.8634	3.8634	1.0000e-004	1.0000e-004	3.8955
Total	**1.4000e-003**	**1.0800e-003**	**0.0147**	**4.0000e-005**	**4.6800e-003**	**3.0000e-005**	**4.7100e-003**	**1.2500e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8634**	**3.8634**	**1.0000e-004**	**1.0000e-004**	**3.8955**

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	0.1494	1.3666	1.5432	2.5600e-003		0.0665	0.0665		0.0626	0.0626	0.0000	220.2145	220.2145	0.0524	0.0000	221.5242
Total	**0.1494**	**1.3666**	**1.5432**	**2.5600e-003**		**0.0665**	**0.0665**		**0.0626**	**0.0626**	**0.0000**	**220.2145**	**220.2145**	**0.0524**	**0.0000**	**221.5242**

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	5.1900e-003	0.1897	0.0704	9.0000e-004	0.0312	1.0000e-003	0.0322	8.9900e-003	9.6000e-004	9.9500e-003	0.0000	88.1589	88.1589	3.2600e-003	0.0128	92.0538
Worker	0.0322	0.0248	0.3375	9.7000e-004	0.1136	6.5000e-004	0.1143	0.0302	6.0000e-004	0.0308	0.0000	88.9009	88.9009	2.2900e-003	2.2900e-003	89.6393
Total	**0.0374**	**0.2145**	**0.4079**	**1.8700e-003**	**0.1448**	**1.6500e-003**	**0.1464**	**0.0392**	**1.5600e-003**	**0.0407**	**0.0000**	**177.0598**	**177.0598**	**5.5500e-003**	**0.0151**	**181.6930**

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	0.1494	1.3666	1.5432	2.5600e-003		0.0665	0.0665		0.0626	0.0626	0.0000	220.2143	220.2143	0.0524	0.0000	221.5239
Total	**0.1494**	**1.3666**	**1.5432**	**2.5600e-003**		**0.0665**	**0.0665**		**0.0626**	**0.0626**	**0.0000**	**220.2143**	**220.2143**	**0.0524**	**0.0000**	**221.5239**

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	5.1900e-003	0.1897	0.0704	9.0000e-004	0.0298	1.0000e-003	0.0308	8.6600e-003	9.6000e-004	9.6200e-003	0.0000	88.1589	88.1589	3.2600e-003	0.0128	92.0538
Worker	0.0322	0.0248	0.3375	9.7000e-004	0.1077	6.5000e-004	0.1084	0.0287	6.0000e-004	0.0293	0.0000	88.9009	88.9009	2.2900e-003	2.2900e-003	89.6393
Total	**0.0374**	**0.2145**	**0.4079**	**1.8700e-003**	**0.1375**	**1.6500e-003**	**0.1392**	**0.0374**	**1.5600e-003**	**0.0389**	**0.0000**	**177.0598**	**177.0598**	**5.5500e-003**	**0.0151**	**181.6930**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not 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	6.9700e-003	0.2627	0.0955	1.2200e-003	0.0430	1.3900e-003	0.0443	0.0124	1.3300e-003	0.0137	0.0000	119.8383	119.8383	4.4900e-003	0.0174	125.1424
Worker	0.0414	0.0305	0.4334	1.3000e-003	0.1567	8.6000e-004	0.1575	0.0416	7.9000e-004	0.0424	0.0000	119.0061	119.0061	2.8600e-003	2.9300e-003	119.9517
Total	**0.0484**	**0.2932**	**0.5290**	**2.5200e-003**	**0.1996**	**2.2500e-003**	**0.2019**	**0.0540**	**2.1200e-003**	**0.0561**	**0.0000**	**238.8444**	**238.8444**	**7.3500e-003**	**0.0204**	**245.0941**

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	6.9700e-003	0.2627	0.0955	1.2200e-003	0.0411	1.3900e-003	0.0425	0.0120	1.3300e-003	0.0133	0.0000	119.8383	119.8383	4.4900e-003	0.0174	125.1424
Worker	0.0414	0.0305	0.4334	1.3000e-003	0.1485	8.6000e-004	0.1494	0.0396	7.9000e-004	0.0404	0.0000	119.0061	119.0061	2.8600e-003	2.9300e-003	119.9517
Total	**0.0484**	**0.2932**	**0.5290**	**2.5200e-003**	**0.1896**	**2.2500e-003**	**0.1919**	**0.0516**	**2.1200e-003**	**0.0537**	**0.0000**	**238.8444**	**238.8444**	**7.3500e-003**	**0.0204**	**245.0941**

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	8.8900e-003	0.0811	0.1046	1.8000e-004		3.4300e-003	3.4300e-003		3.2300e-003	3.2300e-003	0.0000	15.0748	15.0748	3.5400e-003	0.0000	15.1634
Total	**8.8900e-003**	**0.0811**	**0.1046**	**1.8000e-004**		**3.4300e-003**	**3.4300e-003**		**3.2300e-003**	**3.2300e-003**	**0.0000**	**15.0748**	**15.0748**	**3.5400e-003**	**0.0000**	**15.1634**

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	3.4000e-004	0.0130	4.6700e-003	6.0000e-005	2.1300e-003	7.0000e-005	2.2000e-003	6.1000e-004	7.0000e-005	6.8000e-004	0.0000	5.8394	5.8394	2.2000e-004	8.5000e-004	6.0983
Worker	1.9300e-003	1.3600e-003	0.0201	6.0000e-005	7.7700e-003	4.0000e-005	7.8100e-003	2.0600e-003	4.0000e-005	2.1000e-003	0.0000	5.7040	5.7040	1.3000e-004	1.4000e-004	5.7477
Total	**2.2700e-003**	**0.0143**	**0.0247**	**1.2000e-004**	**9.9000e-003**	**1.1000e-004**	**0.0100**	**2.6700e-003**	**1.1000e-004**	**2.7800e-003**	**0.0000**	**11.5434**	**11.5434**	**3.5000e-004**	**9.9000e-004**	**11.8461**

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	8.8900e-003	0.0811	0.1046	1.8000e-004		3.4300e-003	3.4300e-003		3.2300e-003	3.2300e-003	0.0000	15.0748	15.0748	3.5400e-003	0.0000	15.1633
Total	**8.8900e-003**	**0.0811**	**0.1046**	**1.8000e-004**		**3.4300e-003**	**3.4300e-003**		**3.2300e-003**	**3.2300e-003**	**0.0000**	**15.0748**	**15.0748**	**3.5400e-003**	**0.0000**	**15.1633**

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	3.4000e-004	0.0130	4.6700e-003	6.0000e-005	2.0400e-003	7.0000e-005	2.1100e-003	5.9000e-004	7.0000e-005	6.6000e-004	0.0000	5.8394	5.8394	2.2000e-004	8.5000e-004	6.0983
Worker	1.9300e-003	1.3600e-003	0.0201	6.0000e-005	7.3700e-003	4.0000e-005	7.4100e-003	1.9700e-003	4.0000e-005	2.0000e-003	0.0000	5.7040	5.7040	1.3000e-004	1.4000e-004	5.7477
Total	**2.2700e-003**	**0.0143**	**0.0247**	**1.2000e-004**	**9.4100e-003**	**1.1000e-004**	**9.5200e-003**	**2.5600e-003**	**1.1000e-004**	**2.6600e-003**	**0.0000**	**11.5434**	**11.5434**	**3.5000e-004**	**9.9000e-004**	**11.8461**

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	9.1500e-003	0.0858	0.1458	2.3000e-004		4.1900e-003	4.1900e-003		3.8500e-003	3.8500e-003	0.0000	20.0193	20.0193	6.4700e-003	0.0000	20.1811
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1500e-003**	**0.0858**	**0.1458**	**2.3000e-004**		**4.1900e-003**	**4.1900e-003**		**3.8500e-003**	**3.8500e-003**	**0.0000**	**20.0193**	**20.0193**	**6.4700e-003**	**0.0000**	**20.1811**

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	4.1000e-004	2.9000e-004	4.2400e-003	1.0000e-005	1.6500e-003	1.0000e-005	1.6500e-003	4.4000e-004	1.0000e-005	4.4000e-004	0.0000	1.2076	1.2076	3.0000e-005	3.0000e-005	1.2169
Total	**4.1000e-004**	**2.9000e-004**	**4.2400e-003**	**1.0000e-005**	**1.6500e-003**	**1.0000e-005**	**1.6500e-003**	**4.4000e-004**	**1.0000e-005**	**4.4000e-004**	**0.0000**	**1.2076**	**1.2076**	**3.0000e-005**	**3.0000e-005**	**1.2169**

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	9.1500e-003	0.0858	0.1458	2.3000e-004		4.1900e-003	4.1900e-003		3.8500e-003	3.8500e-003	0.0000	20.0192	20.0192	6.4700e-003	0.0000	20.1811
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.1500e-003**	**0.0858**	**0.1458**	**2.3000e-004**		**4.1900e-003**	**4.1900e-003**		**3.8500e-003**	**3.8500e-003**	**0.0000**	**20.0192**	**20.0192**	**6.4700e-003**	**0.0000**	**20.1811**

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	4.1000e-004	2.9000e-004	4.2400e-003	1.0000e-005	1.5600e-003	1.0000e-005	1.5700e-003	4.2000e-004	1.0000e-005	4.2000e-004	0.0000	1.2076	1.2076	3.0000e-005	3.0000e-005	1.2169
Total	**4.1000e-004**	**2.9000e-004**	**4.2400e-003**	**1.0000e-005**	**1.5600e-003**	**1.0000e-005**	**1.5700e-003**	**4.2000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.2076**	**1.2076**	**3.0000e-005**	**3.0000e-005**	**1.2169**

3.7 Architectural Coating - 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					
Archit. Coating	0.3171					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0110	0.0163	3.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	2.2979	2.2979	1.3000e-004	0.0000	2.3012
Total	**0.3187**	**0.0110**	**0.0163**	**3.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.3000e-004**	**0.0000**	**2.3012**

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	5.7000e-004	4.2000e-004	6.0100e-003	2.0000e-005	2.1700e-003	1.0000e-005	2.1800e-003	5.8000e-004	1.0000e-005	5.9000e-004	0.0000	1.6502	1.6502	4.0000e-005	4.0000e-005	1.6633
Total	**5.7000e-004**	**4.2000e-004**	**6.0100e-003**	**2.0000e-005**	**2.1700e-003**	**1.0000e-005**	**2.1800e-003**	**5.8000e-004**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**1.6502**	**1.6502**	**4.0000e-005**	**4.0000e-005**	**1.6633**

3.7 Architectural Coating - 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					
Archit. Coating	0.3171					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6300e-003	0.0110	0.0163	3.0000e-005		5.5000e-004	5.5000e-004		5.5000e-004	5.5000e-004	0.0000	2.2979	2.2979	1.3000e-004	0.0000	2.3012
Total	**0.3187**	**0.0110**	**0.0163**	**3.0000e-005**		**5.5000e-004**	**5.5000e-004**		**5.5000e-004**	**5.5000e-004**	**0.0000**	**2.2979**	**2.2979**	**1.3000e-004**	**0.0000**	**2.3012**

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	5.7000e-004	4.2000e-004	6.0100e-003	2.0000e-005	2.0600e-003	1.0000e-005	2.0700e-003	5.5000e-004	1.0000e-005	5.6000e-004	0.0000	1.6502	1.6502	4.0000e-005	4.0000e-005	1.6633
Total	**5.7000e-004**	**4.2000e-004**	**6.0100e-003**	**2.0000e-005**	**2.0600e-003**	**1.0000e-005**	**2.0700e-003**	**5.5000e-004**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**1.6502**	**1.6502**	**4.0000e-005**	**4.0000e-005**	**1.6633**

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	0.8455					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-003	0.0275	0.0434	7.0000e-005		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	6.1278	6.1278	3.3000e-004	0.0000	6.1362
Total	**0.8496**	**0.0275**	**0.0434**	**7.0000e-005**		**1.2400e-003**	**1.2400e-003**		**1.2400e-003**	**1.2400e-003**	**0.0000**	**6.1278**	**6.1278**	**3.3000e-004**	**0.0000**	**6.1362**

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	1.4400e-003	1.0100e-003	0.0149	5.0000e-005	5.7900e-003	3.0000e-005	5.8200e-003	1.5400e-003	3.0000e-005	1.5700e-003	0.0000	4.2508	4.2508	1.0000e-004	1.0000e-004	4.2834
Total	**1.4400e-003**	**1.0100e-003**	**0.0149**	**5.0000e-005**	**5.7900e-003**	**3.0000e-005**	**5.8200e-003**	**1.5400e-003**	**3.0000e-005**	**1.5700e-003**	**0.0000**	**4.2508**	**4.2508**	**1.0000e-004**	**1.0000e-004**	**4.2834**

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	0.8455					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.1000e-003	0.0275	0.0434	7.0000e-005		1.2400e-003	1.2400e-003		1.2400e-003	1.2400e-003	0.0000	6.1278	6.1278	3.3000e-004	0.0000	6.1362
Total	**0.8496**	**0.0275**	**0.0434**	**7.0000e-005**		**1.2400e-003**	**1.2400e-003**		**1.2400e-003**	**1.2400e-003**	**0.0000**	**6.1278**	**6.1278**	**3.3000e-004**	**0.0000**	**6.1362**

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	1.4400e-003	1.0100e-003	0.0149	5.0000e-005	5.4900e-003	3.0000e-005	5.5200e-003	1.4600e-003	3.0000e-005	1.4900e-003	0.0000	4.2508	4.2508	1.0000e-004	1.0000e-004	4.2834
Total	**1.4400e-003**	**1.0100e-003**	**0.0149**	**5.0000e-005**	**5.4900e-003**	**3.0000e-005**	**5.5200e-003**	**1.4600e-003**	**3.0000e-005**	**1.4900e-003**	**0.0000**	**4.2508**	**4.2508**	**1.0000e-004**	**1.0000e-004**	**4.2834**

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	0.2722	0.3219	2.8014	6.3500e-003	0.7027	4.6000e-003	0.7073	0.1875	4.2800e-003	0.1918	0.0000	587.8734	587.8734	0.0381	0.0259	596.5318
Unmitigated	0.2722	0.3219	2.8014	6.3500e-003	0.7027	4.6000e-003	0.7073	0.1875	4.2800e-003	0.1918	0.0000	587.8734	587.8734	0.0381	0.0259	596.5318

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		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Research & Development	552.50	552.50	552.50	1,866,705	1,866,705
Total	552.50	552.50	552.50	1,866,705	1,866,705

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	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Research & Development	16.60	8.40	6.90	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644
Other Non-Asphalt Surfaces	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644
Research & Development	0.542639	0.062168	0.185423	0.128137	0.023809	0.006526	0.012163	0.008660	0.000816	0.000502	0.024766	0.000746	0.003644

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	366.6619	366.6619	0.0310	3.7500e-003	368.5535
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	366.6619	366.6619	0.0310	3.7500e-003	368.5535
NaturalGas Mitigated	0.0280	0.2544	0.2137	1.5300e-003		0.0193	0.0193		0.0193	0.0193	0.0000	276.9582	276.9582	5.3100e-003	5.0800e-003	278.6040
NaturalGas Unmitigated	0.0280	0.2544	0.2137	1.5300e-003		0.0193	0.0193		0.0193	0.0193	0.0000	276.9582	276.9582	5.3100e-003	5.0800e-003	278.6040

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	5.19e +006	0.0280	0.2544	0.2137	1.5300e-003		0.0193	0.0193		0.0193	0.0193	0.0000	276.9582	276.9582	5.3100e-003	5.0800e-003	278.6040
Total		**0.0280**	**0.2544**	**0.2137**	**1.5300e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**276.9582**	**276.9582**	**5.3100e-003**	**5.0800e-003**	**278.6040**

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	5.19e +006	0.0280	0.2544	0.2137	1.5300e-003		0.0193	0.0193		0.0193	0.0193	0.0000	276.9582	276.9582	5.3100e-003	5.0800e-003	278.6040
Total		**0.0280**	**0.2544**	**0.2137**	**1.5300e-003**		**0.0193**	**0.0193**		**0.0193**	**0.0193**	**0.0000**	**276.9582**	**276.9582**	**5.3100e-003**	**5.0800e-003**	**278.6040**

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	2.0675e+006	366.6619	0.0310	3.7500e-003	368.5535
Total		**366.6619**	**0.0310**	**3.7500e-003**	**368.5535**

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
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	2.0675e+006	366.6619	0.0310	3.7500e-003	368.5535
Total		**366.6619**	**0.0310**	**3.7500e-003**	**368.5535**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	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	1.0221	3.0000e-005	3.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2400e-003	6.2400e-003	2.0000e-005	0.0000	6.6500e-003
Unmitigated	1.0221	3.0000e-005	3.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2400e-003	6.2400e-003	2.0000e-005	0.0000	6.6500e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1163					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9055					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9000e-004	3.0000e-005	3.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2400e-003	6.2400e-003	2.0000e-005	0.0000	6.6500e-003
Total	**1.0221**	**3.0000e-005**	**3.2000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.2400e-003**	**6.2400e-003**	**2.0000e-005**	**0.0000**	**6.6500e-003**

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	0.1163					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.9055					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.9000e-004	3.0000e-005	3.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	6.2400e-003	6.2400e-003	2.0000e-005	0.0000	6.6500e-003
Total	**1.0221**	**3.0000e-005**	**3.2000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**6.2400e-003**	**6.2400e-003**	**2.0000e-005**	**0.0000**	**6.6500e-003**

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	260.4906	3.2237	0.0780	364.3301
Unmitigated	325.0616	4.0296	0.0975	454.8581

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.11999	2.2067	1.9000e-004	2.0000e-005	2.2181
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	122.923 / 0	322.8549	4.0294	0.0975	452.6400
Total		**325.0616**	**4.0296**	**0.0975**	**454.8581**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 1.11999	2.2067	1.9000e-004	2.0000e-005	2.2181
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	98.3388 / 0	258.2839	3.2235	0.0780	362.1120
Total		**260.4906**	**3.2237**	**0.0780**	**364.3301**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.9365	0.1145	0.0000	4.7977
Unmitigated	3.8731	0.2289	0.0000	9.5954

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.08	0.0162	9.6000e-004	0.0000	0.0402
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	19	3.8568	0.2279	0.0000	9.5551
Total		**3.8731**	**0.2289**	**0.0000**	**9.5954**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.04	8.1200e-003	4.8000e-004	0.0000	0.0201
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Research & Development	9.5	1.9284	0.1140	0.0000	4.7776
Total		**1.9365**	**0.1145**	**0.0000**	**4.7977**

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 D

Noise Assessment

Acoustical Assessment
Falling Leaves Foundation
Medical Innovation Building Project
University of California, Irvine

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TABLE OF CONTENTS

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) Falling Leaves Foundation Medical Innovation Building 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 Project site is in UCI's West Campus, northwest of the Michael Drake Drive and Health Sciences Road 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 Health Science Road.

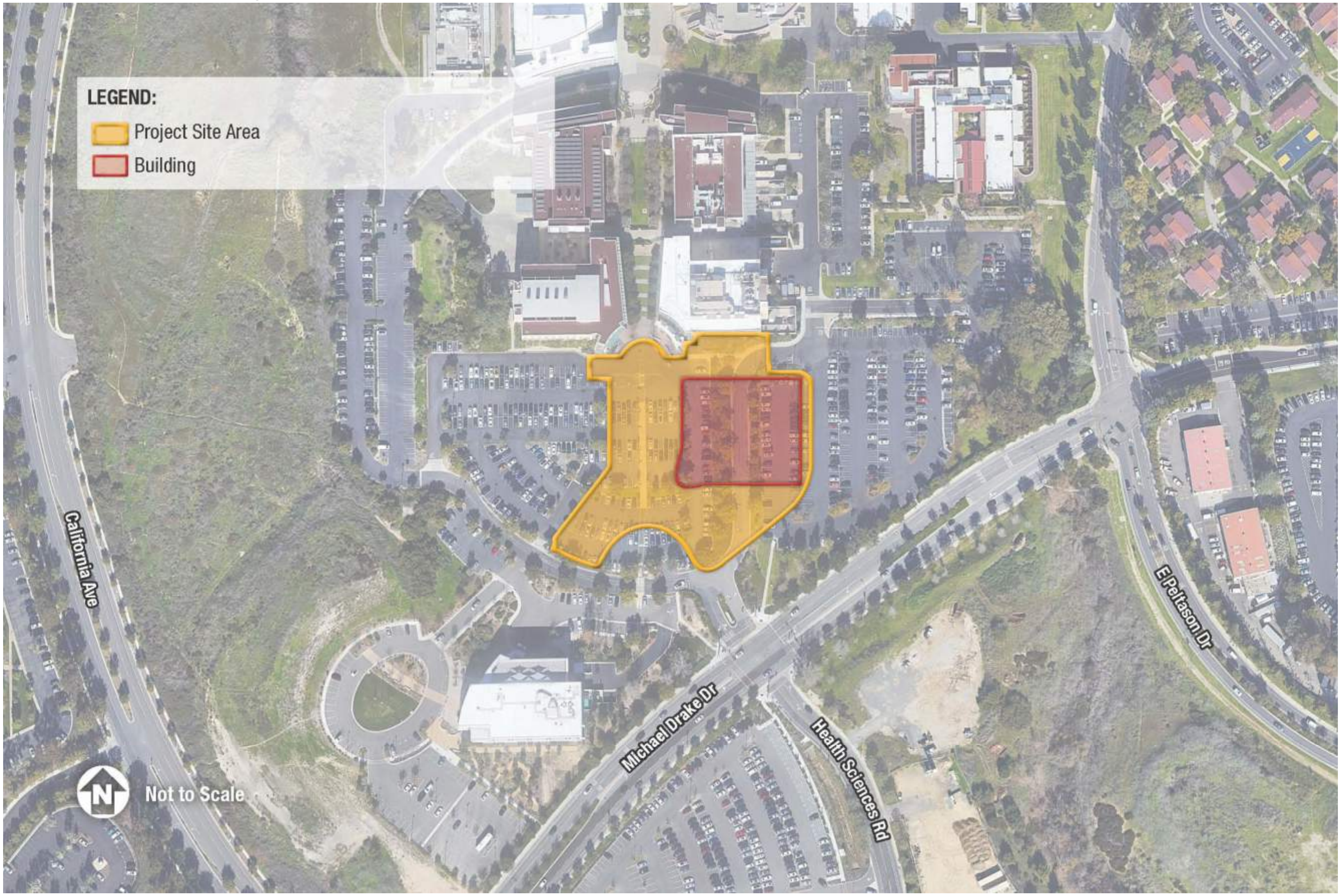
1.2 Project Description

The University of California, Irvine (UCI) is proposing the Falling Leaves Foundation Medical Innovation Building project, which would demolish portions of the existing surface parking Lots 82 and 83 and would construct an approximately 250,000-gross-square-foot (GSF) facility within the UCI West Campus to support collaborative, interdisciplinary, and innovative research in medicine and other health sciences disciplines; see **Exhibit 3: Conceptual Site Plan**. Proposed uses to be constructed within the new facility includes academic, laboratory, research, administrative, and support space. Additional improvements include realignment of the existing Health Sciences Road, landscaping, and lighting. Surrounding uses to the project site include Gross Hall, Hewitt Hall, and surface parking to the north; Gavin Herbert Eye Institute and Michael Drake Drive to the south; West Peltason Drive to the east; and surface parking to the west.

Project construction is anticipated to start in October 2022 and end by March 2025. Building occupancy would occur by summer of 2025 before the start of the new school year. Earthwork during project construction would include approximately 15,500 cubic yards (CY) of cut and 1,500 CY of fill with an approximate net export of 14,000 CY.

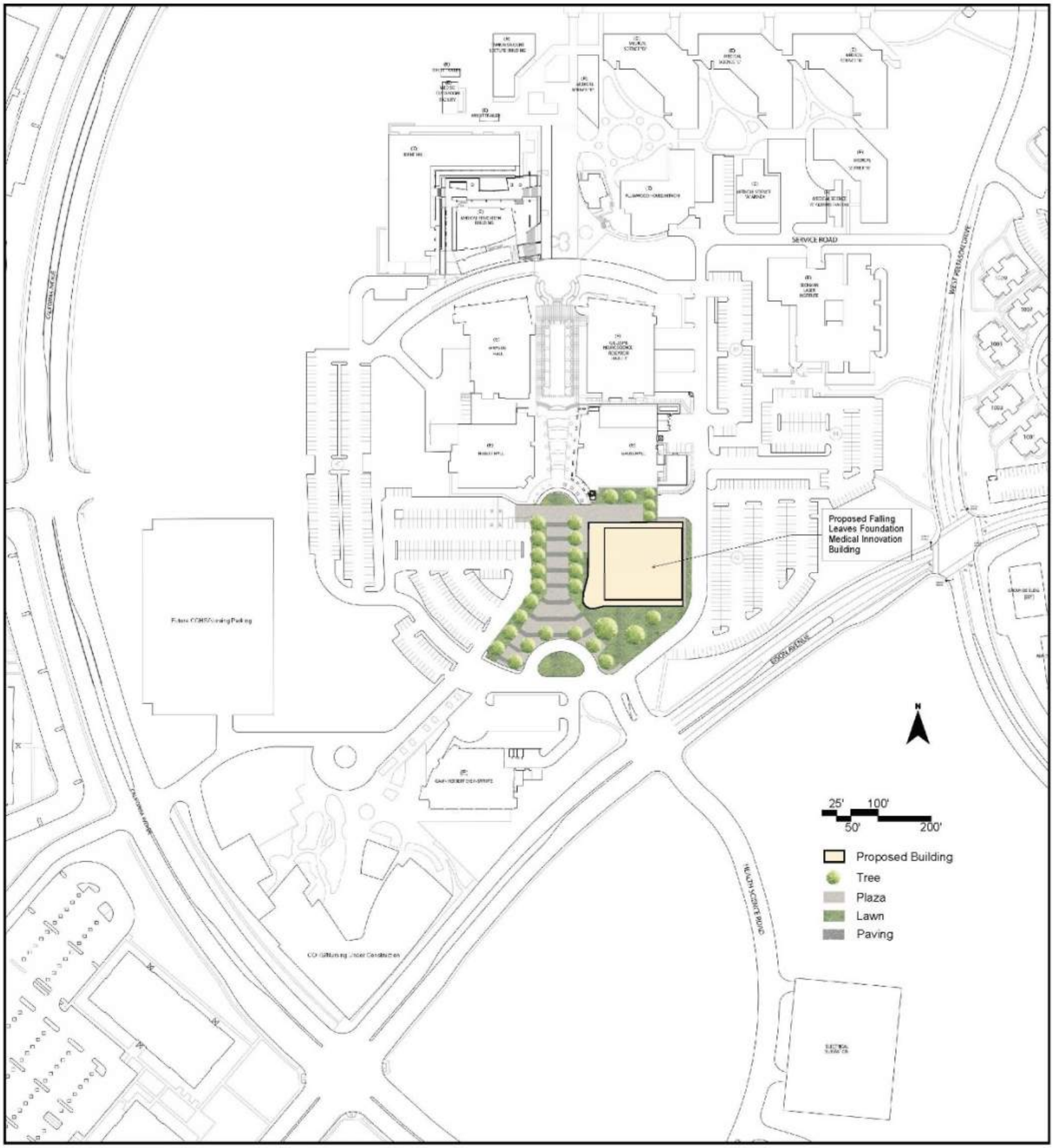
Exhibit 1: Regional Vicinity

Exhibit 2: Site Vicinity



Source: Google Earth, 2022.

Exhibit 3: Conceptual Site Plan



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}) represents the continuous sound pressure level 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.

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[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 any interior space, the acceptable interior noise limit for new outdoor 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 70 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 4: 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.

<u>City of Irvine Noise Ordinance</u>

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 Levels**, presents noise standards published in Section 6-8-204 of the City of Irvine Noise Ordinance. The proposed Project would be considered as Noise Zone 2.

Table 5: 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 north and east including group conversations, pet noise, and general maintenance activities.

Existing Mobile Noise

The majority of the existing noise in the project area is generated from vehicle sources along Michael Drake Drive.

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 UCI Health Sciences buildings. The noise associated with the service parking area associated with the UCI Health Sciences buildings may represent a single-event noise occurrence, short-term noise, or long-term/continuous noise.

4.2 Noise Measurements

To quantify existing ambient noise levels in the Project area, Kimley-Horn conducted three short-term noise measurements near the Project site on January 5, 2022; see **Appendix A: Noise Data**. The noise measurement sites were representative of typical existing noise exposure within and immediately adjacent to the Project site. The 10-minute daytime measurements were taken between 8:00 a.m. and 9:00 a.m. The average noise levels and sources of noise measured at each location are listed in **Table 6: Existing Noise Measurements**.

Table 6: Existing Noise Measurements

Site	Location	L_{eq} (dBA)	L_{min} (dBA)	L_{max} (dBA)	Time and Date
1	Adjacent to the Gavin Herbert Eye Institute off of Health Sciences Road.	58.7	51.7	77.1	8:28 – 8:38 a.m.
2	Adjacent to the south entrance of Gross Hall.	57.6	52.7	64.9	8:13 – 8:23 a.m.
3	East side of West Peltason Road adjacent to Campus Village.	59.9	50.7	71.9	8:50 – 9:00 a.m.

Source: Noise measurements taken by Kimley-Horn and Associates on December 19, 2019. See **Appendix A** for noise measurement results.

4.3 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 7: Sensitive Receptors**.

Table 7: Sensitive Receptors	
Receptor Description	**Distance and Direction from the Project[1]**
Gross Hall	Adjacent to the north
Hewitt Research Hall	Adjacent to the northwest
Multifamily Housing	572 feet to the northeast
Single Family Residences	2,445 feet to the southeast
Multifamily Housing	3,067 feet to the west
Newport Bluffs Apartment Homes	3,083 feet to the southwest
UCI Middle Earth Housing	3,514 feet to the northeast
1. Distances were measured using Google Earth 2022.	

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 adjacent to the classroom and research buildings north and northwest of the Project site as well as existing multifamily residences located approximately 572 feet from existing to the northeast. Other sensitive land uses are located more than approximately 2,400 feet away and are separated by streets and other buildings that would obstruct construction noise to insignificant levels.

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 8: Typical Construction Noise Levels.**

As noted above, the closest sensitive receptors to the Project are the classroom and research buildings directly to the north and northwest and the multifamily residences to the northeast. The equipment used near the existing campus facilities 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 8: 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. As discussed above, the 2007 LRDP EIR uses a construction noise threshold of 75 dBA (Leq 12 hour) between 7:00 a.m. and 7:00 p.m. at any noise-sensitive land use.[9]

The noise levels calculated in **Table 9: Project Construction Noise Levels**, show estimated exterior construction noise at the closest receptors. UCI buildings are located directly to the north and northwest. Residential uses are located approximately 572 feet to the northeast of the Project site. The distances used in the model are changed to reflect that construction would take place throughout the Project site and would not take place extensively on the edge of the Project site. 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 9** conservatively do not account for attenuation from the perimeter walls along each of the existing sensitive receptors to the north and northeast.

Table 9: 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	Northeast	606	62.1	75	No
	UCI Buildings	North	150	74.3	75	No
Site Preparation	Residential	Northeast	606	57.4	75	No
	UCI Buildings	North	150	69.6	75	No
Grading	Residential	Northeast	606	61.0	75	No
	UCI Buildings	North	150	73.1	75	No
Building Construction	Residential	Northeast	606	59.1	75	No
	UCI Buildings	North	150	71.2	75	No
Paving	Residential	Northeast	606	55.0	75	No
	UCI Buildings	North	150	67.1	75	No
Architectural Coating	Residential	Northeast	606	52.0	75	No
	UCI Buildings	North	150	64.1	75	No

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 the 2007 LRDP EIR.

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

9 University of California, Irvine, *2007 Long Range Development Plan Final Environmental Impact Report*, Page 4.9-31, November 2007.

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 9 shows that construction noise levels would not exceed the 75-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 proposed Project would construct an approximately 250,000 GSF building that would consist of laboratory, academic, research, administrative, and support space. The structure would be approximately 5-to-6 stories above grade in height, with a basement, for 7 stories total. Thus, the operational noise (stationary sources and traffic) associated with the proposed Project would be similar to the existing surrounding academic buildings and existing noise levels.

After completion of construction activities, typical noise associated with university facility land uses include traffic, talking, and delivery drop offs. Noise from 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 proposed Project 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. 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 university facility would be located 150 feet or more from the closest sensitive receptors and would be located atop the seven-story structure (i.e., the closest sensitive receptors are at a lower elevation than the proposed Project). 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.

[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.

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[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 parking stalls and would be consistent with existing conditions. 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 result in an increase of 551 average daily trips (ADT). 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.

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

[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.

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 10: 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 UCI buildings directly to the north and northwest of the construction area. As shown in **Table 10**, at 50 feet, construction equipment vibration velocities would not exceed 0.032 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.

Mitigation Measures: No mitigation is required.

Level of Significance: Less than significant impact.

[15] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, April 2020.

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 2.15-miles to the northwest of the Project site. According to the *John Wayne Airport 2019 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.

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 be significant. 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.

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 2019 Annual 60-75 (5 dB intervals) CNEL Noise Contours*, 2019.
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. Stantec, *Falling Leaves Medical Building Project Trip Generation Summary,* December 2021.
15. University of California, Irvine, *2007 Long Range Development Plan Final Environmental Impact Report*, November 2007.
16. University of California, Irvine, *Long Range Development Plan*, 2007.
17. U.S. Environmental Protection Agency, *Protective Noise Levels*, 1978.
18. U.S. Department of Housing and Urban Development, *Noise Guidebook*, 2009.

Appendix A

Noise Data

Noise Measurement Field Data

Project:	UCI Falling Leaves	**Job Number:**	194105203
Site No.:	1	**Date:**	1/5/2022
Analyst:	Mel Thayer	**Time:**	8:28 AM
Location:	GH Eye Institute		
Noise Sources:	Traffic, pedestrians, construction, landscaping		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
58.7	51.7	77.1	97.1

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	46
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.10"
Humidity:	89%

Photo:

Summary

File Name on Meter	RIA.007.s
File Name on PC	LxTse_0005586-20220105 082820-RIA.007.ldbin
Serial Number	0005586
Model	SoundExpert® LxT
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-01-05 08:28:20
Stop	2022-01-05 08:38:20
Duration	00:10:00.0
Run Time	00:09:59.7
Pause	00:00:00.3
Pre-Calibration	2022-01-05 07:24:19
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	A Weighting	
OBA Max Spectrum	At LMax	
Overload	122.4 dB	
	A	**C**
Under Range Peak	**79.0**	76.0
Under Range Limit	**25.3**	25.9
Noise Floor	16.1	16.8

Results

LA_{eq}	58.7	
LAE	86.5	
EA	49.923 µPa²h	
$LA_{peak\ (max)}$	2022-01-05 08:36:50	97.1
LAS_{max}	2022-01-05 08:36:50	77.1
LAS_{min}	2022-01-05 08:33:59	51.7

SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0
Community Noise	**Ldn**	**LDay 07:00-22:00**
	58.7	58.7
LCeq	70.0 dB	
LAeq	58.7 dB	
LCeq - LAeq	11.2 dB	
LAIeq	63.6 dB	
LAeq	58.7 dB	
LAIeq - LAeq	4.9 dB	

	A	
	dB	**Time Stamp**
Leq	58.7	
LS(max)	77.1	2022/01/05 8:36:50
LS(min)	51.7	2022/01/05 8:33:59
LPeak(max)	97.1	2022/01/05 8:36:50

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA5.00	63.1 dB
LA10.00	61.2 dB
LA33.30	56.4 dB
LA50.00	55.4 dB
LA66.60	54.6 dB
LA90.00	53.0 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**
Direct	2019-10-29 12:18:45	-28.39
PRMLxT1L	2022-01-05 07:24:19	-28.65
PRMLxT1L	2021-12-20 16:26:54	-28.78
PRMLxT1L	2021-12-16 16:11:27	-28.75
PRMLxT1L	2021-12-01 07:34:32	-28.62
PRMLxT1L	2021-11-10 12:30:29	-28.54
PRMLxT1L	2021-11-10 08:13:52	-28.75
PRMLxT1L	2021-11-02 11:50:22	-28.70
PRMLxT1L	2021-10-27 07:14:28	-28.78

Measurement Report

Report Summary

Meter's File Name	RIA.006.s	Computer's File Name	LxTse_0005586-20220105 081245-RIA.006.ldbin
Meter	LxT SE 0005586		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2022-01-05 08:12:45	Duration	0:10:00.0		
End Time	2022-01-05 08:22:45	Run Time	0:10:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	57.6 dB		
LAE	85.4 dB	SEA	--- dB
EA	38.7 µPa²h		
LA_{peak}	85.9 dB	2022-01-05 08:13:55	
LAS_{max}	64.9 dB	2022-01-05 08:14:53	
LAS_{min}	52.7 dB	2022-01-05 08:22:07	
LA_{eq}	57.6 dB		
LC_{eq}	68.8 dB	LC_{eq} - LA_{eq}	11.2 dB
LAI_{eq}	58.5 dB	LAI_{eq} - LA_{eq}	0.8 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	57.6 dB	57.6 dB	0.0 dB	
	LDEN	LDay	LEve	LNight
	57.6 dB	57.6 dB	--- dB	--- dB

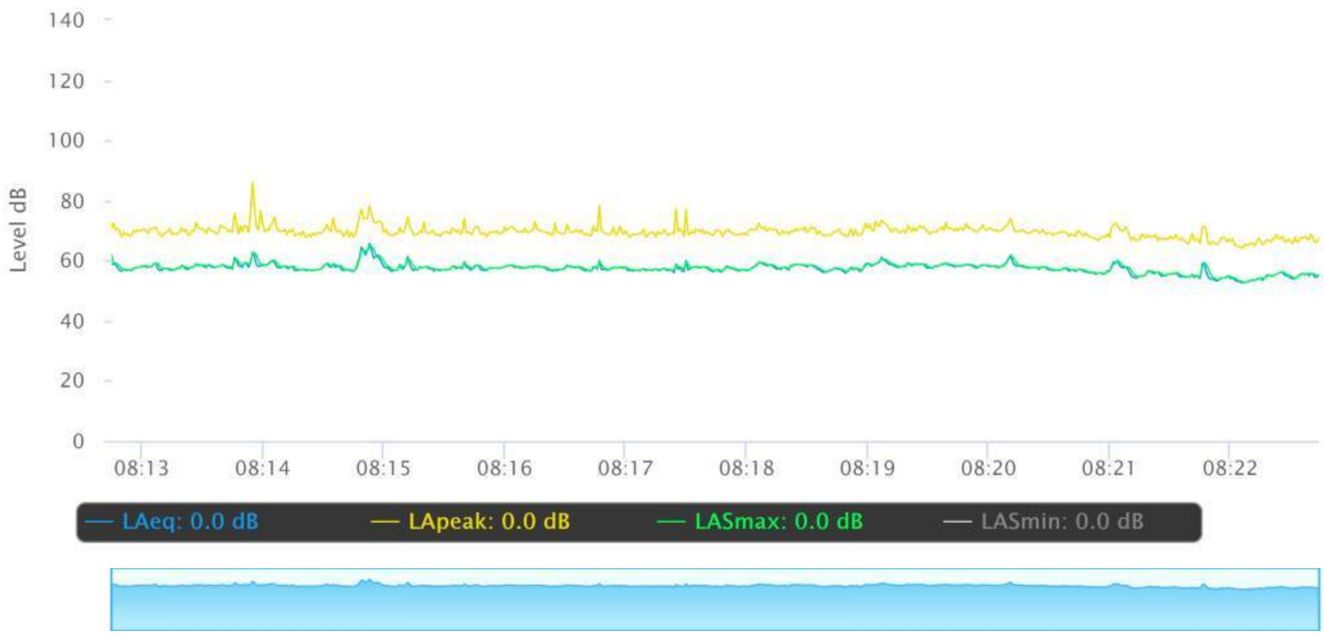
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	57.6 dB		68.8 dB		--- dB	
$Ls_{(max)}$	64.9 dB	2022-01-05 08:14:53	--- dB		--- dB	
$LS_{(min)}$	52.7 dB	2022-01-05 08:22:07	--- dB		--- dB	
$L_{Peak(max)}$	85.9 dB	2022-01-05 08:13:55	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	59.5 dB
LAS 10.0	58.8 dB
LAS 33.3	57.9 dB
LAS 50.0	57.5 dB
LAS 66.6	57.0 dB
LAS 90.0	55.1 dB

Time History



Noise Measurement Field Data

Project:	UCI Falling Leaves	**Job Number:**	194105203
Site No.:	2	**Date:**	1/5/2022
Analyst:	Mel Thayer	**Time:**	8:13 AM
Location:	Gross Hall		
Noise Sources:	Construction, traffice, aircraft, parking lot, landscaping		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
57.6	52.7	64.9	85.9

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	46
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.10"
Humidity:	89%

Photo:

Kimley»Horn

Summary

File Name on Meter	RIA.006.s	
File Name on PC	LxTse_0005586-20220105 081245-RIA.006.ldbin	
Serial Number	0005586	
Model	SoundExpert® LxT	
Firmware Version	2.404	
User		
Location		
Job Description		
Note		

Measurement

Description		
Start	2022-01-05 08:12:45	
Stop	2022-01-05 08:22:45	
Duration	00:10:00.0	
Run Time	00:10:00.0	
Pause	00:00:00.0	
Pre-Calibration	2022-01-05 07:24:19	
Post-Calibration	None	
Calibration Deviation	---	

Overall Settings

RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	A Weighting	
OBA Max Spectrum	At LMax	
Overload	122.4 dB	
	A	**C**
Under Range Peak	**79.0**	76.0
Under Range Limit	**25.3**	25.9
Noise Floor	16.1	16.8

Results

LAeq	57.6	
LAE	85.4	
EA	38.681 µPa²h	
LApeak (max)	2022-01-05 08:13:55	85.9
LASmax	2022-01-05 08:14:53	64.9
LASmin	2022-01-05 08:22:07	52.7

SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0
Community Noise	**Ldn**	**LDay 07:00-22:00**
	57.6	57.6
LCeq	68.8 dB	
LAeq	57.6 dB	
LCeq - LAeq	11.2 dB	
LAIeq	58.5 dB	
LAeq	57.6 dB	
LAIeq - LAeq	0.8 dB	

	A	
	dB	**Time Stamp**
Leq	57.6	
LS(max)	64.9	2022/01/05 8:14:53
LS(min)	52.7	2022/01/05 8:22:07
LPeak(max)	85.9	2022/01/05 8:13:55

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA5.00	59.5 dB
LA10.00	58.8 dB
LA33.30	57.9 dB
LA50.00	57.5 dB
LA66.60	57.0 dB
LA90.00	55.1 dB

Calibration History

Preamp	Date	dB re. 1V/Pa
Direct	2019-10-29 12:18:45	-28.39
PRMLxT1L	2022-01-05 07:24:19	-28.65
PRMLxT1L	2021-12-20 16:26:54	-28.78
PRMLxT1L	2021-12-16 16:11:27	-28.75
PRMLxT1L	2021-12-01 07:34:32	-28.62
PRMLxT1L	2021-11-10 12:30:29	-28.54
PRMLxT1L	2021-11-10 08:13:52	-28.75
PRMLxT1L	2021-11-02 11:50:22	-28.70
PRMLxT1L	2021-10-27 07:14:28	-28.78

Measurement Report

Report Summary

Meter's File Name	RIA.007.s		Computer's File Name	LxTse_0005586-20220105 082820-RIA.007.ldbin
Meter	LxT SE	0005586		
Firmware	2.404			
User				Location
Job Description				
Note				

Start Time	2022-01-05 08:28:20	Duration	0:10:00.0		
End Time	2022-01-05 08:38:20	Run Time	0:09:59.7	Pause Time	0:00:00.3

Results

Overall Metrics

LA_{eq}	58.7 dB		
LAE	86.5 dB	SEA	--- dB
EA	49.9 µPa²h		
LA_{peak}	97.1 dB	2022-01-05 08:36:50	
LAS_{max}	77.1 dB	2022-01-05 08:36:50	
LAS_{min}	51.7 dB	2022-01-05 08:33:59	
LA_{eq}	58.7 dB		
LC_{eq}	70.0 dB	LC_{eq} - LA_{eq}	11.2 dB
LAI_{eq}	63.6 dB	LAI_{eq} - LA_{eq}	4.9 dB

Exceedances

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise

LDN	LDay	LNight	
58.7 dB	58.7 dB	0.0 dB	
LDEN	**LDay**	**LEve**	**LNight**
58.7 dB	58.7 dB	--- dB	--- dB

Any Data

	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	58.7 dB		70.0 dB		--- dB	
$Ls_{(max)}$	77.1 dB	2022-01-05 08:36:50	--- dB		--- dB	
$LS_{(min)}$	51.7 dB	2022-01-05 08:33:59	--- dB		--- dB	
$L_{Peak(max)}$	97.1 dB	2022-01-05 08:36:50	--- dB		--- dB	

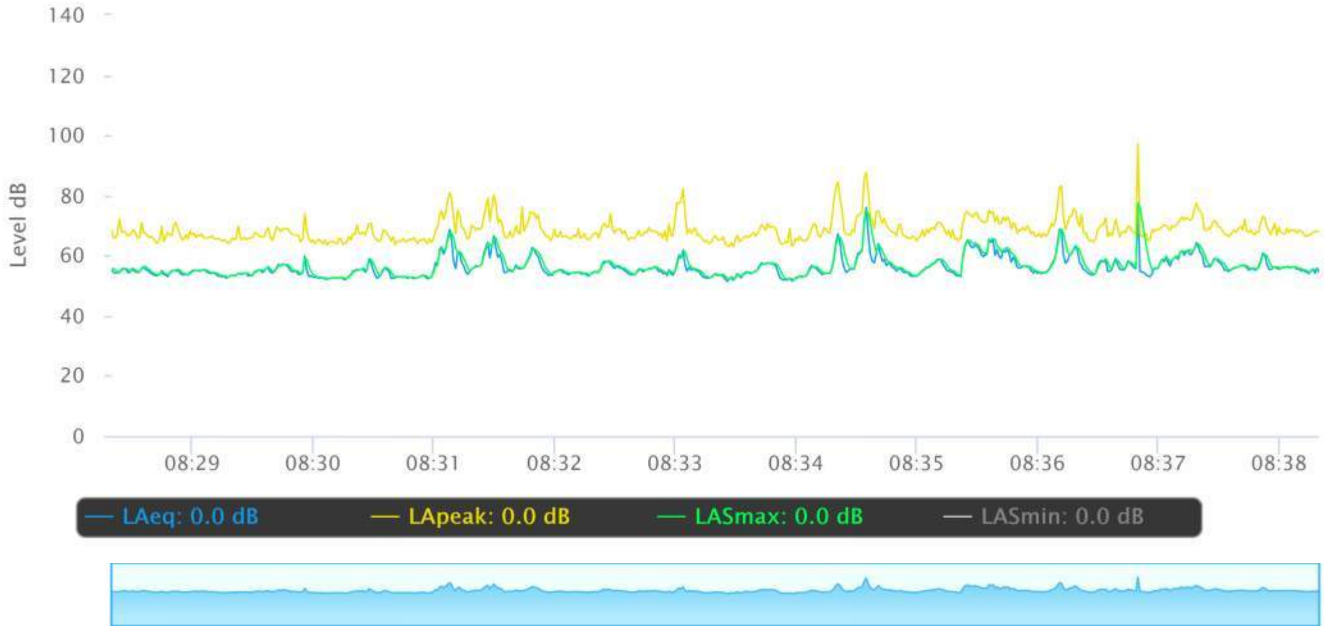
Overloads

Count	Duration	OBA Count	OBA Duration
0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	63.1 dB
LAS 10.0	61.2 dB
LAS 33.3	56.4 dB
LAS 50.0	55.4 dB
LAS 66.6	54.6 dB
LAS 90.0	53.0 dB

Time History



Noise Measurement Field Data

Project:	UCI Falling Leaves	**Job Number:**	194105203
Site No.:	3	**Date:**	1/5/2022
Analyst:	Mel Thayer	**Time:**	8:50 AM
Location:	West Peltason Drive/Multifamily housing		
Noise Sources:	Traffic, landscaping, residential activities		
Comments:			

Results (dBA):

Leq:	Lmin:	Lmax:	Peak:
59.9	50.7	71.9	85.9

Equipment	
Sound Level Meter:	LD SoundExpert LxT
Calibrator:	CAL200
Response Time:	Slow
Weighting:	A
Microphone Height:	5 feet

Weather	
Temp. (degrees F):	46
Wind (mph):	< 5
Sky:	Clear
Bar. Pressure:	30.10"
Humidity:	89%

Photo:

Kimley»Horn

Summary		
File Name on Meter	RIA.008.s	
File Name on PC	LxTse_0005586-20220105 084940-RIA.008.ldbi	
Serial Number	0005586	
Model	SoundExpert® LxT	
Firmware Version	2.404	
User		
Location		
Job Description		
Note		

Measurement	
Description	
Start	2022-01-05 08:49:40
Stop	2022-01-05 08:59:40
Duration	00:10:00.0
Run Time	00:10:00.0
Pause	00:00:00.0
Pre-Calibration	2022-01-05 07:24:19
Post-Calibration	None
Calibration Deviation	---

Overall Settings		
RMS Weight	A Weighting	
Peak Weight	A Weighting	
Detector	Slow	
Preamplifier	PRMLxT1L	
Microphone Correction	Off	
Integration Method	Linear	
OBA Range	Normal	
OBA Bandwidth	1/1 and 1/3	
OBA Frequency Weighting	A Weighting	
OBA Max Spectrum	At LMax	
Overload	122.4 dB	
	A	**C**
Under Range Peak	**79.0**	76.0
Under Range Limit	**25.3**	25.9
Noise Floor	16.1	16.8

Results		
LA_{eq}	59.9	
LAE	87.7	
EA	65.839 µPa²h	
$LA_{peak\ (max)}$	2022-01-05 08:56:32	85.9
LAS_{max}	2022-01-05 08:53:53	71.9
LAS_{min}	2022-01-05 08:57:39	50.7

SEA	-99.9 dB	
LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0
Community Noise	**Ldn**	**LDay 07:00-22:00**
	59.9	59.9
LCeq	70.6 dB	
LAeq	59.9 dB	
LCeq - LAeq	10.7 dB	
LAIeq	61.1 dB	
LAeq	59.9 dB	
LAIeq - LAeq	1.1 dB	

	A	
	dB	**Time Stamp**
Leq	59.9	
LS(max)	71.9	2022/01/05 8:53:53
LS(min)	50.7	2022/01/05 8:57:39
LPeak(max)	85.9	2022/01/05 8:56:32

Overload Count	0
Overload Duration	0.0 s
OBA Overload Count	0
OBA Overload Duration	0.0 s

Statistics

LA5.00	65.1 dB
LA10.00	63.2 dB
LA33.30	58.9 dB
LA50.00	56.5 dB
LA66.60	55.0 dB
LA90.00	52.6 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**
Direct	2019-10-29 12:18:45	-28.39
PRMLxT1L	2022-01-05 07:24:19	-28.65
PRMLxT1L	2021-12-20 16:26:54	-28.78
PRMLxT1L	2021-12-16 16:11:27	-28.75
PRMLxT1L	2021-12-01 07:34:32	-28.62
PRMLxT1L	2021-11-10 12:30:29	-28.54
PRMLxT1L	2021-11-10 08:13:52	-28.75
PRMLxT1L	2021-11-02 11:50:22	-28.70
PRMLxT1L	2021-10-27 07:14:28	-28.78

Measurement Report

Report Summary

Meter's File Name	RIA.008.s	Computer's File Name	LxTse_0005586-20220105 084940-RIA.008.ldbin
Meter	LxT SE 0005586		
Firmware	2.404		
User		Location	
Job Description			
Note			

Start Time	2022-01-05 08:49:40	Duration	0:10:00.0		
End Time	2022-01-05 08:59:40	Run Time	0:10:00.0	Pause Time	0:00:00.0

Results

Overall Metrics

LA_{eq}	59.9 dB		
LAE	87.7 dB	SEA	--- dB
EA	65.8 µPa²h		
LA_{peak}	85.9 dB	2022-01-05 08:56:32	
LAS_{max}	71.9 dB	2022-01-05 08:53:53	
LAS_{min}	50.7 dB	2022-01-05 08:57:39	
LA_{eq}	59.9 dB		
LC_{eq}	70.6 dB	LC_{eq} - LA_{eq}	10.7 dB
LAI_{eq}	61.1 dB	LAI_{eq} - LA_{eq}	1.1 dB

Exceedances	Count	Duration
LAS > 85.0 dB	0	0:00:00.0
LAS > 115.0 dB	0	0:00:00.0
LApeak > 135.0 dB	0	0:00:00.0
LApeak > 137.0 dB	0	0:00:00.0
LApeak > 140.0 dB	0	0:00:00.0

Community Noise	LDN	LDay	LNight	
	59.9 dB	59.9 dB	0.0 dB	
	LDEN	**LDay**	**LEve**	**LNight**
	59.9 dB	59.9 dB	--- dB	--- dB

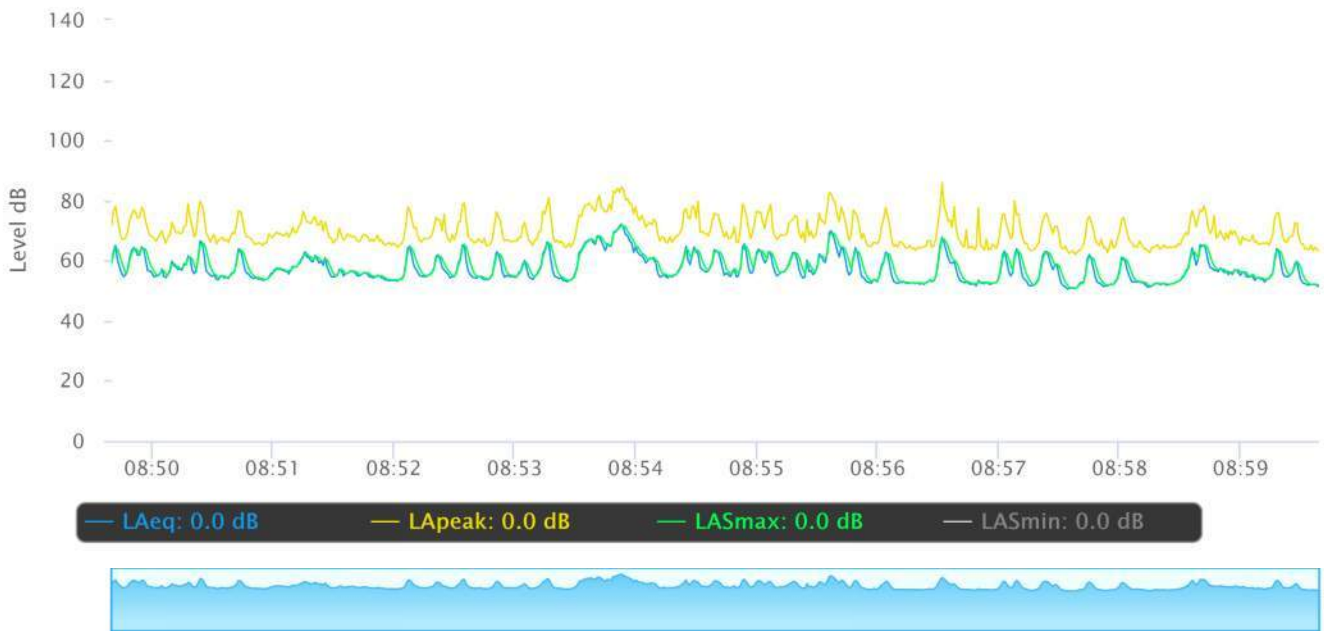
Any Data	A		C		Z	
	Level	Time Stamp	Level	Time Stamp	Level	Time Stamp
L_{eq}	59.9 dB		70.6 dB		--- dB	
$Ls_{(max)}$	71.9 dB	2022-01-05 08:53:53	--- dB		--- dB	
$LS_{(min)}$	50.7 dB	2022-01-05 08:57:39	--- dB		--- dB	
$L_{Peak(max)}$	85.9 dB	2022-01-05 08:56:32	--- dB		--- dB	

Overloads	Count	Duration	OBA Count	OBA Duration
	0	0:00:00.0	0	0:00:00.0

Statistics

LAS 5.0	65.1 dB
LAS 10.0	63.2 dB
LAS 33.3	58.9 dB
LAS 50.0	56.5 dB
LAS 66.6	55.0 dB
LAS 90.0	52.6 dB

Time History



Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/10/2022
Case Description: UCI Falling Leaves- Demo

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Classrooms/Labs	Residential	1	1	1

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
Dozer	No	40		81.7	150	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
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
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	74.3	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 #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-Family	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Concrete Saw	No	20		89.6	606	0
Dozer	No	40		81.7	606	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
Concrete Saw		67.9	60.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer		60	56	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	67.9	62.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/10/2022
Case Description: UCI Falling Leaves- Site Prep

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Classrooms/Labs	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	150	0
Backhoe	No	40		77.6	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
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
	Total	72.1	69.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-Family	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	606	0
Backhoe	No	40		77.6	606	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		60	56	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		55.9	51.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	60	57.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/10/2022
Case Description: UCI Falling Leaves- Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Classrooms/Labs	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40	85		150	0
Dozer	No	40		81.7	150	0

Results

Equipment		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		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
	Total	75.5	73.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-Family	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Excavator	No	40	85		606	0
Dozer	No	40		81.7	606	0

Results

Equipment		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Excavator		63.3	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
Dozer		60	56	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	63.3	61	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: 1/10/2022
Case Description: UCI Falling Leaves- Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Classrooms/Labs	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		150	0
Crane	No	16		80.6	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
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
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
	Total	74.5	71.2	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
Multi-Family	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Tractor	No	40	84		606	0
Crane	No	16		80.6	606	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
Tractor		62.3	58.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Crane		58.9	50.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	62.3	59.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 1/10/2022
Case Description: UCI Falling Leaves- Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Classrooms/Labs	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	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
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	70.5	67.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-Family	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Paver	No	50		77.2	606	0
Roller	No	20		80	606	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		55.5	52.5	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		58.3	51.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	58.3	55	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: 1/10/2022
Case Description: UCI Falling Leaves- Architectural Coating

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Classrooms/Labs	Residential	1	1	1

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

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
	Total	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

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Multi-Family	Residential	1	1	1

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	606	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)		56	52	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	56	52	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.

APPENDIX E

Traffic Study

UCI FALLING LEAVES FOUNDATION MEDICAL INNOVATION BUILDING PROJECT TRANSPORTATION STUDY

January 7, 2022

Prepared for:
University of California Irvine

Prepared by:
Stantec Consulting Services Inc.

Project Number: 2042539165

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Prepared by: ________________________________

Signature

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Printed Name

Reviewed by: ________________________________

Signature

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Printed Name

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Executive Summary

Stantec Consulting Services Inc. (Stantec) has performed a transportation impact analysis for the proposed University of California Irvine (UCI) Falling Leaves Medical Building (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.

Project Description

The Project site is located in UCI's West Campus, at the College of Health Sciences campus area. The proposed Project would demolish portions of surface parking Lot 83 and Lots 82 and Health Sciences Road to construct an approximately 250,000 gross square feet (GSF) building that would consist of laboratory, academic, research, administrative, and support space. The structure would be approximately five to six stories above grade in height, with a basement, for seven stories total. Health Sciences Road would be realigned to run along the east of the Project site and reconnect to the existing roadway to the north of the Project site.

Access to the Project can be made by vehicle, by bicycle, and by walking, primarily via Michael Drake Drive and Health Sciences Road. The intersection of Michael Drake Drive and Health Science Road is signalized and marked crosswalks are present. Secondary access to the Project site can be made via the West Peltason Drive and Health Sciences Road intersection and a new access under construction via California Avenue.

The current UCI Long Range Development Plan (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's land use is designated as Academic Use and Support Facilities. Although additional faculty and staff would be hired as part of the Project, the proposed Project does not result in an increase to enrollment levels or to the number of UCI faculty and staff analyzed in the LRDP.

Analysis Methodology

To evaluate the Project's potential impact on VMT, both quantitative and qualitative analyses are prepared using recommendations from the Governor's Office of Planning and Research Technical Advisory (OPR's Technical Advisory) and the City of Irvine VMT Guidelines. Prior to conducting a full VMT analysis, a screening evaluation was performed to determine if the Project can be presumed to have a less than significant impact. When a Project does not meet at least one of the screening criteria, a full VMT analysis is required.

The quantitative impact analysis utilizes the City of Irvine's analysis methodology and travel demand forecasting model, Irvine Traffic Analysis Model TransCAD Version (ITAM TC).Per City of Irvine Guidelines, the "Project change VMT rate" is the net change in total countywide non-residential VMT and the net change in total employees are used to estimate the Project change VMT rate per capita based on the existing condition as a baseline. This methodology of using the net change in countywide totals, as opposed to the Project's location by traffic analysis zone (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.

The Project change VMT rate derived from ITAM TC is compared to the applicable threshold of significance. The Project would be determined to cause a significant impact when the Project change VMT rate is greater than the threshold of significance. Feasible mitigation measures are identified to reduce the VMT rate to less than significant levels.

In addition, a qualitative analysis is conducted to evaluate the Project's potential impacts on the multi-modal network, land use, and consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).

Transportation Impact Analysis Summary

Screening Evaluation: Screening criteria recommended in OPR's Technical Advisory and the City of Irvine's VMT Guidelines is used to determine if the Project could be presumed to have a less than significant impact based on size, location, proximity to transit, local serving land use and affordable housing. Trip generation is used to screen a project based on size. The City of Irvine Guidelines utilizes a threshold of 250 trips per day. VMT maps can be used to determine if the project is in a low-VMT area. The City of Irvine does not use the location/map-based screening criteria; therefore, no maps are available for the project area. The proximity to transit screening uses distance (within a half mile) to an "existing major transit stop or an existing stop along a high-quality transit corridor" as the criteria. The City of Irvine identified two transit priority areas (TPA) in the City, the areas around Metrolink stations. A local serving use are small retail projects, a daycare or K-12 local serving public school. Lastly, a project that is 100% affordable housing can be screened from a VMT analysis. The Project does not meet any of the screening criteria at this time.

The Project would meet the Proximity to High Quality Transit category under pre-pandemic conditions. Three Anteater Express stops are located within a half mile walk of the Project site. The Project site is serviced by the M line. The closest bus stop is located less than a quarter mile walk on West Peltason Drive opposite Lot 84. Two other stops are within a half mile walk at the West Peltason Drive at Academy Way intersection (approximately 0.35 miles away) and East Peltason Drive at the Multipurpose Science and Technology Building (approximately 0.50 miles away).

Prior to March 2020 (pre-pandemic conditions) headways for the M Line were 6 to 10 minutes during the day and 25 minutes after 7:00 PM. As of January 2022, the M Line is operating on reduced service, with the first departure at 4:00 PM and the last departure at 10:30 PM with headways of 30 minutes. Therefore, under pre-pandemic conditions 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. However, since there is no indication on when normal service would resume, the Project is not presumed to be less than significant using this criteria.

VMT Analysis: Per the City of Irvine Guidelines, ITAM TC is used to estimate the net change in VMT and net change in employment to calculate what is referred to as the "Project change VMT rate" measured on a per capita basis (VMT per employee). The Project is located in ITAM TC traffic analysis zone 564. The Project's land use was added to the zone existing conditions (2018 baseline) and a full ITAM TC run was conducted. The ITAM TC VMT tool was used to estimate VMT for conditions with the Project for comparison to conditions without the Project.

The ITAM TC VMT estimates do not consider VMT reductions from TDM strategies already in place by the UCI campus, specifically, UCI's Sustainable Transportation Program. UCI's Sustainable Transportation Program is a project feature where employees of the Project would be eligible and encouraged to utilize more sustainable commuting options (other than single occupancy vehicles) offered by the UCI Transportation and Distribution Service. Currently, approximately 67 percent of employees use these more sustainable commuting options. Additionally, California Air Pollution Control Officers Association's (CAPCOA) provides substantial evidence that monitored TDM programs can achieve up to a 21% reduction in commute VMT. The City of Irvine recognizes participation in a TDM program to achieve up to 5% reduction in VMT. Since UCI's Sustainable Transportation Program is a project feature, ITAM TC estimates were conservatively adjusted to include the City's standard 5% reduction in VMT.

Table ES-1 provides a comparison between the Project VMT per capita (per employee) and the significance threshold.

Table ES-1 VMT Impact Summary

Description	VMT per Employee
ITAM TC Project Change VMT Rate (per Employee)	43.02
Adjusted Project Change VMT Rate (per Employee)[1]	40.87
Countywide Average (Baseline)	48.66
Threshold of Significance (Baseline minus 15%)	41.36
Difference from Threshold of Significance	-0.49 or -1.1%
Is Project above or below Regional Threshold?	Below
Significant Impact?	No
Source: ITAM TC [1]Includes the City of Irvine's conservative 5% VMT reduction to account for UCI's Sustainable Transportation Program	

As shown, the Project results in a VMT per capita (per employee) of 40.87. The threshold of significance is 41.36 VMT per capita (per employee). The Project VMT is lower than the regional average and the threshold of significance. Therefore, the Project would not result in a significant impact.

Multimodal Transportation Impact 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 and bicycle amenities to encourage biking. Since the Project is enhancing the multimodal transportation network, it would have less than significant impact.

Land Use Impact Analysis – The Project is 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 (Cumulative Impact Analysis) – The Project's cumulative effects are determined through consistency with the RTP/SCS. The Project land use is consistent with UCI's 2007 LRDP and the City of Irvine zoning map. 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. Therefore, since the Project is consistent with the approved 2007 LRDP and the City of Irvine's General Plan zoning map, the Project would be consistent with Connect SoCal and the Project would have a less than significant impact based on this consistency criteria.

Conclusion

In summary, the project-level impact on transportation is less than significant. Since the Project does not cause a significant impact at the project-level, the Project does not cause a cumulative impact.

1 Introduction

Stantec Consulting Services Inc. (Stantec) has performed a transportation impact analysis for the proposed University of California Irvine (UCI) Falling Leaves Medical Building (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 in UCI's West Campus, within the College of Health Sciences campus area. More specifically, the project site is just north of the Michael Drake Drive and Health Sciences Road intersection, as shown in **Figure 1-1**.

The proposed project would demolish portions of surface parking Lot 83 and Lots 82 and Health Sciences Road to construct an approximately 250,000 gross square feet (GSF) building that would consist of laboratory, academic, research, administrative, and support space. The structure would be approximately five to six stories above grade in height, with a basement, for seven stories total. Health Sciences Road would be realigned to run along the east of the project site and reconnect to the existing roadway to the north of the project site.

The Project includes pedestrian circulation and access improvements, including those required to comply with the American with Disabilities Act (ADA). On-site pedestrian walkways will serve the building and provide connections to off-site pedestrian systems. On-site bicycle amenities will be provided in key locations to service bicycle commuters. The Project's proposed site plan is illustrated in **Figure 1-2**.

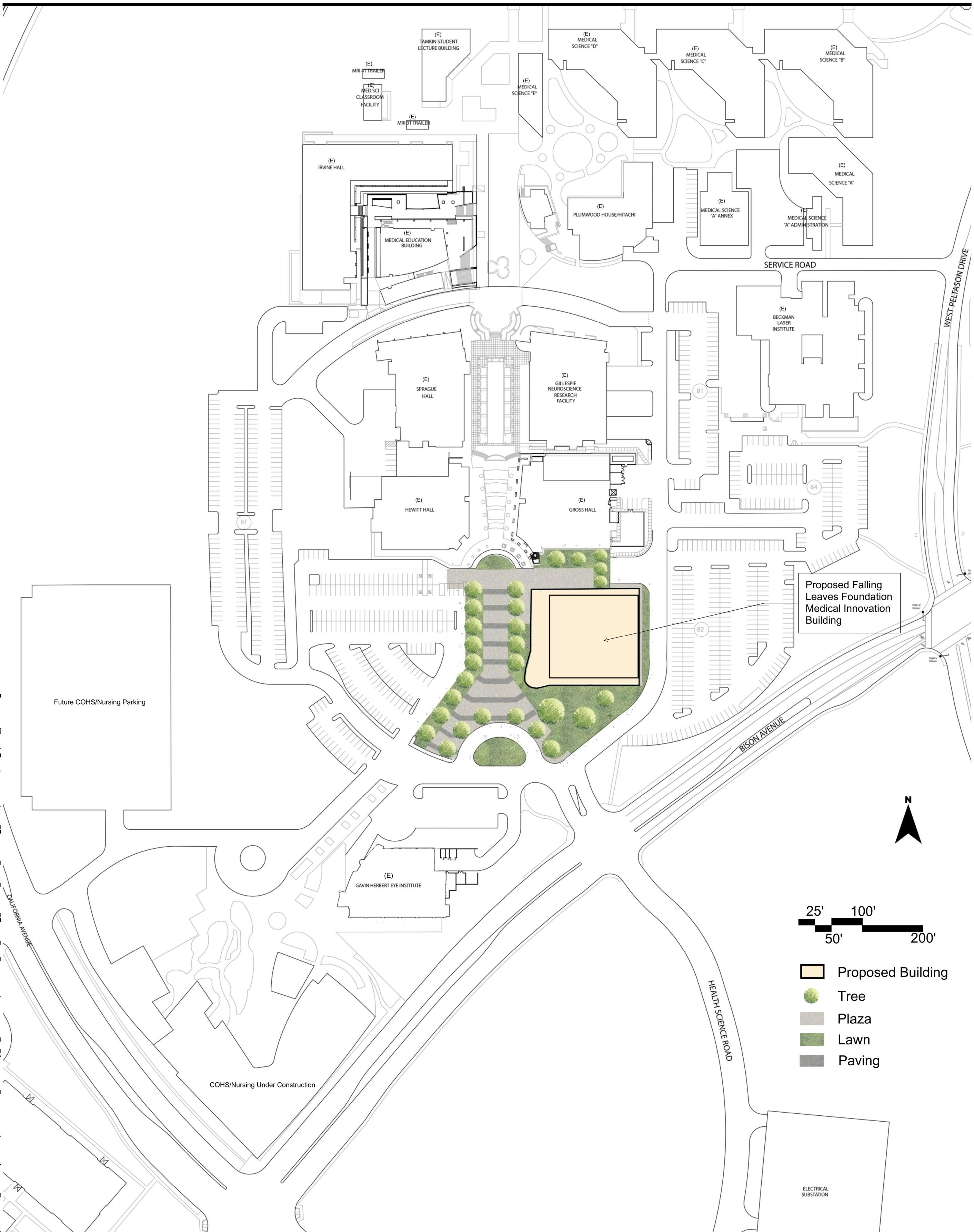
1.2 UCI Long Range Development Plan (LRDP)

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's land use is designated as Academic Use and Support Facilities. Although approximately 375 additional faculty and staff would be hired as part of the Project, the proposed Project does not result in an increase to enrollment levels or to the number of UCI faculty and staff analyzed in the LRDP.

Figure 1-1

Project Location

1.2



Source: UCI

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Figure 1-2

Project Site Plan

1.3 Project Site Access

Primary access to the Project can be made by vehicle, by bicycle, and by walking, primarily via Michael Drake Drive and Health Sciences Road. The intersection of Michael Drake Drive and Health Science Road is signalized and marked crosswalks are present across the north (Health Science Road), west (Michael Drake Drive/Bison Avenue), and south (Health Sciences Road) legs. Secondary vehicle access to the Project site can be made via the West Peltason Drive and Health Sciences Road intersection and a new access under construction via California Avenue.

Sidewalks and shared use pathways will be provided on-site, providing pedestrian and bicycle access. As shown in the previously referenced **Figure 1-2,** Health Sciences Road will be realigned to run along the easterly boundary of the project site and reconnect to the existing roadway to the north of the project site.

2 Existing Conditions

This chapter describes the existing transportation setting in the vicinity of the Project site.

2.1 Existing Roadway System

The Project site is just north of the Michael Drake Drive/Bison Avenue and Health Sciences Road intersection. The following are general descriptions of the roadways in the Project area.

Michael Drake Drive between California Avenue and Peltason Drive is designated as a Primary Arterial on the City of Irvine and the Orange County Master Plan Arterial Highways (MPAH). This segment of the roadway consists of four travel lanes, a raised median, bike lanes, and the posted speed limit is 40 mph.

Similarly, Bison Avenue between State Route 73 and California Avenue is designated as a Primary Arterial on the City of Irvine and the Orange County MPAH. Bison Avenue provides four vehicular travel lanes, bike lanes, a raised median and the posted speed limit is 40 mph.

Health Sciences Road provides direct access to UCI's west campus. Health Sciences Road extends from parking lot 82 and 83 at the northerly terminus and provides north/south travel intersecting at California Avenue and terminating at a surface parking lot south of the California Avenue intersection. The roadway has two travel lanes and bike lanes.

California Avenue is designated as a primary arterial and runs from University Drive to Health Sciences Road. It provides four travel lanes with a raised median through the study area. The speed limit is 35 mph from Bison Avenue to Health Science Road and 45 mph from University Drive to Bison Avenue. On-street parking is not allowed, and a striped bike lane is provided.

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.

2.2 Existing Active Transportation

Active transportation is well supported in the Project vicinity, with sidewalks and on-street bicycle lanes provided on both sides of Michael Drake Drive, Health Sciences Road, California Avenue, and West Peltason Drive. These facilities 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.

In addition to the bicycle lanes noted above, there are existing bike lanes on Campus Drive, East Peltason Drive, Arroyo Drive, Adobe Circle South, Verano Road, Anteater Drive, Academy Way and Bridge Road 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.

2.3 Existing Transit

Transit service near the Project site is available by UCI's Anteater Express bus transit service. **Figure 1-4** illustrates the Anteater Express service routes. Anteater Express provides access to destinations both on and off the UCI campus and provides a connection to Orange County Transportation Authority (OCTA) bus stops. OCTA provides services to the wider transit network, including the Tustin Metrolink Station.

The Project site is serviced by the M line. The closest stop is located less than a quarter mile walk on West Peltason Drive opposite Lot 84. Two other stops are within a half mile walk at West Peltason Drive at Academy Way intersection (approximately 0.35 miles away) and East Peltason Drive at the Multipurpose Science and Technology Building (approximately 0.50 miles away).

2.4 Existing Transportation Demand Management (TDM)

Transportation Demand Management (TDM) measures are important and effective tools to reduce greenhouse gas emissions (GHG), increase vehicle efficiency, and reduce VMT. Co-benefits to reducing VMT include fewer vehicle crashes, improved air quality and improved physical and mental health. UCI proactively utilizes TDM measures through UCI's Sustainable Transportation Program, which complies with the UC's Sustainable Transportation Policy Goals.

2.4.1 UCI SUSTAINABLE TRANSPORTATION PROGRAM

UCI's Sustainable Transportation Program utilizes various TDM measures and was created with the goal to "reduce the total number of vehicle trips made to the campus by faculty, staff and students and reduce commute emissions". Since 2007 UCI has implemented a comprehensive program of TDM measures resulting in an average vehicle ridership of 2.11 (based on 2019 survey), the highest of any employer greater than 3,000 in the Orange, Los Angeles, and Riverside County SCAQMD. UCI's annual investment in TDM measures is approximately $5 million.

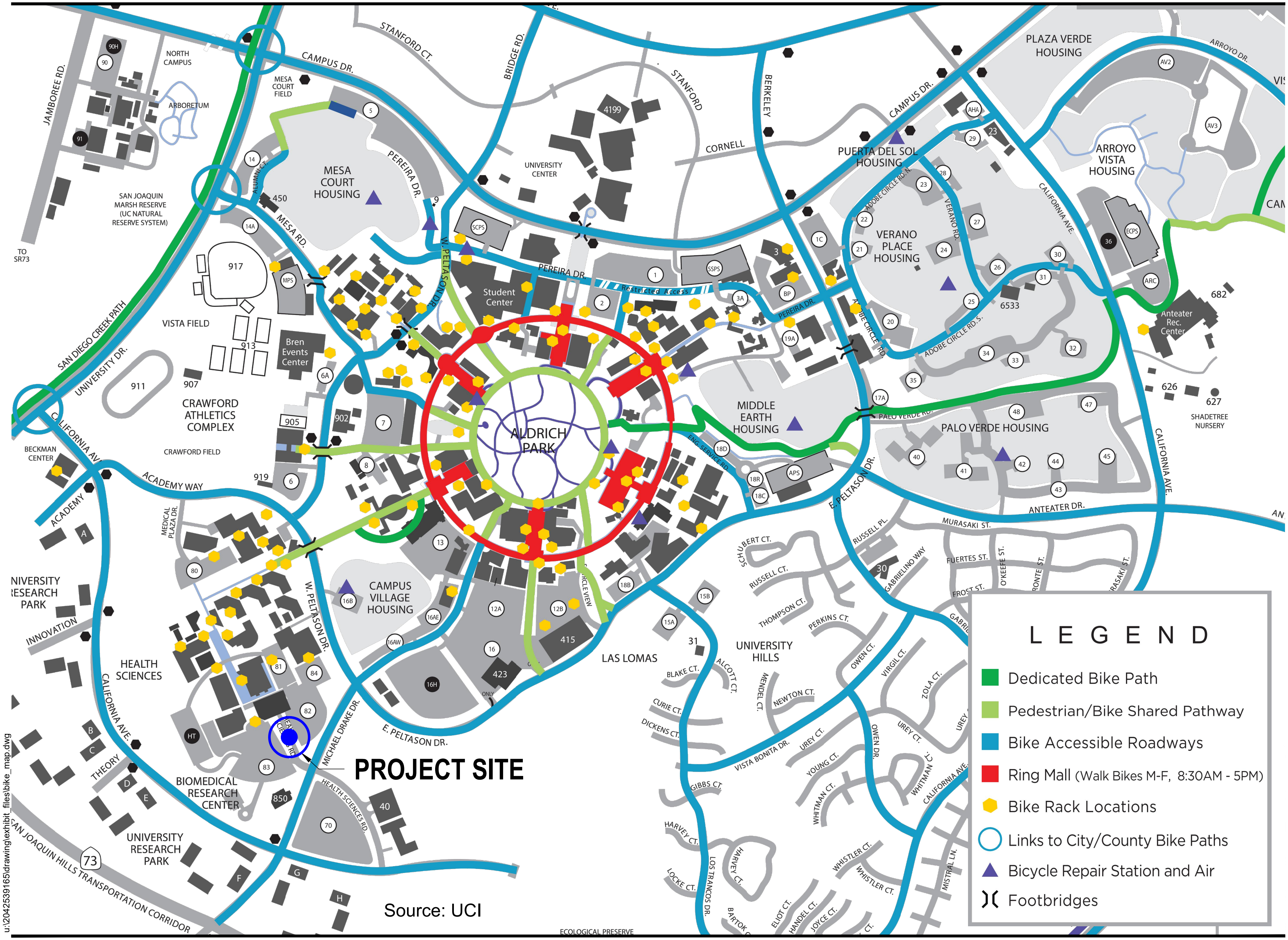

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Figure 2-3

UCI Bike Map

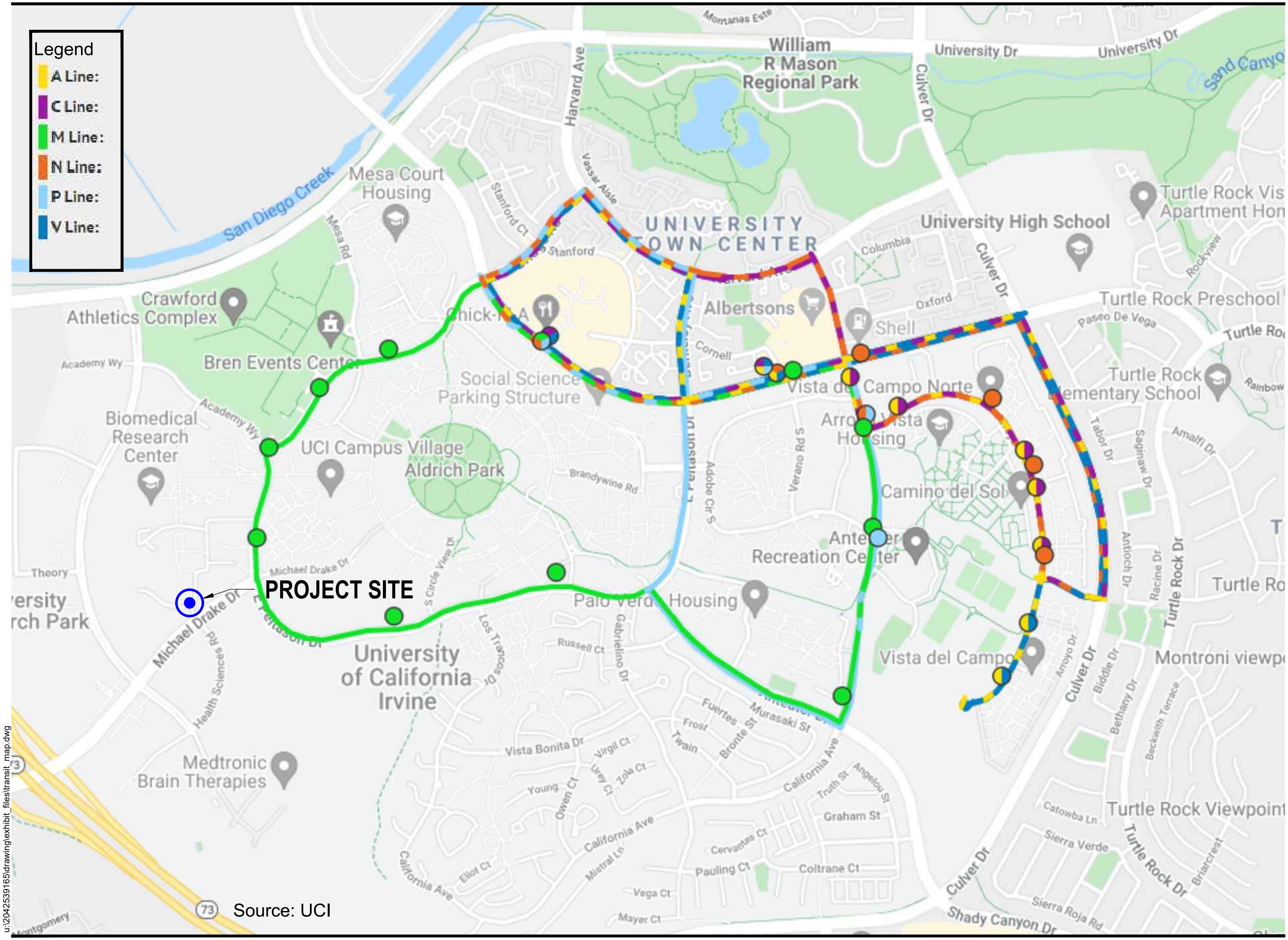

Figure 2-4

Anteater Express Routes

TDM measures result in a reduction of VMT. UCI's Transportation and Distribution Services offers several sustainable commuting options as listed below:

- Carpool matching through WAZEpool (an on-demand carpool matching service).
- Carpool incentive program for employees and graduate students (free parking for carpools),
- Ride-share through Zimride (a private ride-sharing network for UCI),
- OC Vanpools (also known as "super carpools" subsidized in part by OCTA and operated through a third-party provider),
- Guaranteed Ride Home Program,
- "University Pass" transit program with 80% subsidy for unlimited OCTA ridership and coordination OCTA of routes,
- 20% rebate on commuter Metrolink and Amtrak train passes,
- Convenient cost-effective options to reduce monthly transportation expenses for University students and employees,
- UCI – OC University Bus Program (provides unlimited access to the OCTA bus system),
- Zipcar car sharing program with 16 cars and over 6,000 on campus members (the University's carshare),
- UCI Zotwheels bike ridesharing service (currently offline due to expansion),
- Anteater Express (UCI's campus shuttle service with live bus tracking), in 2019 UCI shuttle system ridership was 2.2 million passengers at a cost of $2.8 million,
- UCI Medical Campus shuttle route (provides rides to UCI Medical Hospital located outside of the campus),
- Bicycle program highlights include BikeUCI Ambassadors, the most comprehensive peer-to-peer outreach program for biking in the country; over 3,000 bike parking spaces; significant investment in bikeway infrastructure; bicycle education for campus affiliates of all bicycling levels offered quarterly; and major bi-annual bike education festivals to encourage safe and legal riding.

The TDM strategies listed above are consistent with California Air Pollution Control Officers Association's (CAPCOA's) comprehensive list of TDM mitigation measures that reduce GHG emissions. The Sustainability Tracking, Assessment & Rating System (STARS) website summarizes the results of a survey of UCI students and employees conducted in 2017. The purpose of the survey was to evaluate student and employee commute habits. The survey concludes that 33 percent of employee survey respondents commute with only the driver in the vehicle (single occupancy vehicle), 18 percent vanpool or carpool, 4 percent take the campus shuttle or public transportation, less than one percent use a motorcycle or scooter, 5 percent telecommute, and 40 percent walk, bicycle, or use other non-motorized means. Overall, this shows that approximately 67 percent of employees use more sustainable commuting options. This can be attributed to the several TDM measures listed above.

All staff and faculty of the Project are eligible and will be encouraged to participate in UCI's TDM programs.

2.4.2 UC SUSTAINABLE TRANSPORTATION POLICY

UCI's Sustainable Transportation Program is used to achieve the UC's Sustainable Transportation Policy Goals. Specific to commute trips, the UC Sustainable Transportation Policy is as follows:

- By 2025, each location shall strive to reduce its percentage of employees and students commuting by single-occupancy vehicles (SOV) by 10 percent relative to its 2015 SOV commute rates. By 2050, each location shall strive to have no more than 40 percent of its employees and not more than 30 percent of all employees and students commuting to the location by SOV.
- By 2025, each location shall strive to have at least 4.5 percent of commuter vehicles by zero-emission vehicles (ZEV). By 2050, each location shall strive to have at least 30 percent of commuter vehicles by ZEV.

The progress of each UC campus towards the goals stated above is continuously monitored. The policy goals above are a part of UCI's LRDP EIR mitigation measures and have been implemented through UCI Sustainable Transportation Program and are continuously monitored for progress to achieve the goals by 2025 and 2050. The current TDM programs that are in place have reduced SOV commute and would be extended to the Project.

3 Transportation Impact Analysis Methodology

This chapter describes the analysis methodology and significance thresholds utilized in this analysis.

3.1 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 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.

To evaluate the Project's potential impact on VMT, this analysis uses recommendations from the Governor's Office of Planning and Research Technical Advisory (OPR's Technical Advisory) and the City of Irvine VMT Guidelines. Prior to conducting a fully VMT analysis, a screening evaluation was performed to determine if the Project can be presumed have a less than significant impact. If a full VMT analysis is warranted, the calculated project VMT rate is compared to the applicable threshold of significance.

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

In addition, a qualitative analysis is conducted that evaluates the Project's potential impacts on the multi-modal network, surrounding land uses, and consistency with the Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS).

3.2 Screening Criteria and Significance Thresholds

The screening criteria and significance thresholds utilized for the quantitative and qualitative analyses are summarized in **Table 3-1**.

3.2.1 SCREENING EVALUATION CRITERIA

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.

Table 3-1 Screening Criteria and VMT Analysis Significance Thresholds Summary

Category	Description	Threshold
1. Screening Evaluation	OPR's Technical Advisory and the City of Irvine's VMT Guidelines provides screening categories for land use projects. These screening categories include: • Trip generation screening (Small Project) • Proximity to transit (Transit Priority Area) • Locally serving uses • Affordable residential development • Map-based screening (Low VMT Areas)	If the Project meets one of the screening criteria, the Project is presumed to have a less than significant impact and no further evaluation is needed. Refer to **Table 3-2** for individual screening categories and thresholds.
2. VMT Impact Analysis	If the Project does not meet on of the screening criteria, Project generated VMT is evaluated. The Project's VMT per capita is compared to the applicable threshold of significance. For non-residential projects, OPR's Technical Advisory and the City of Irvine's VMT Guidelines recommends using VMT per employee. The City of Irvine's impact analysis methodology and significance thresholds are used in this analysis.	If the Project's VMT per capita is less than the threshold of significance, the Project has a less than significant impact. The threshold of significance is 15% less than existing countywide average VMT per employee. Refer to **Table 3-4** for City of Irvine significance thresholds.
3. Multi-modal transportation Impact Analysis	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 does not restrict or eliminates access the Project has a less than significant impact.
4. Land Use Impact Analysis	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 (Cumulative Impact Analysis)	The purpose of the RTP/SCS is to evaluate regional land use patterns and transportation systems to achieve the State's target GHG emissions reduction goals. Evaluate if the Project is consistent with the RTP/SCS.	If the Project is consistent with the RTP/SCS, then the Project would have less than significant cumulative impact.

For this analysis the Project has been evaluated considering both OPR's Technical Advisory and the City of Irvine's screening process. The screening criteria is summarized in **Table 3-2**.

Table 3-2 Screening Criteria

Category	Description	Criteria/Threshold
Trip Generation Screening (Small Project)	Small projects can be screened out from completing a full VMT analysis.	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.
Proximity to High Quality Transit (Transit Priority Area)	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.	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 use screening	Locally-serving uses – 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 In addition to retail, the City of Irvine includes local-serving uses such as a daycare or a K-12 local serving public school.	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 Housing Screening	100% affordable housing in infill locations can be screened out from completing a full VMT analysis.	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.
Map-Based Screening (Low-VMT Area Screening)	Projects that are located in areas with low VMT can be screened out from completing a full VMT analysis.	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

3.2.2 OPR'S TECHNIAL ADVISORY SIGNIFICANCE THRESHOLDS

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. 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 3-3.**

Table 3-3 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.

3.2.3 CITY OF IRVINE SIGNIFICANCE THRESHOLDS

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 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.

The City of Irvine have developed their Guidelines to be consistent with Section 15064.3 of the CEQA Guidelines. ITAM TC is used to calculate VMT statistics for existing conditions and with Project conditions. For this analysis, two model scenarios are utilized—a No Project run (baseline existing conditions) and a With Project run (existing conditions plus the Project). The net difference in VMT between the With Project run and the existing baseline 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 3-4 summarizes the City of Irvine's significance thresholds.

Table 3-4 City of Irvine Significance Thresholds

Development Type	Metric	Significance Threshold Description	Existing Ave. VMT per capita [1]	Significance Threshold (15 percent reduction from average)[1]
Residential project	VMT per population	15% less than existing countywide average residential VMT per capita	17.50 VMT per population	14.88 VMT per population
Non-residential project	VMT per employee	15% less than existing countywide average VMT per employee	48.66 VMT per employee	41.36 VMT per employee
Mixed-use projects	Each use evaluated separately per above			
Source: CEQA Manual Volume III. Technical Appendices, City of Irvine, April 2020 [1] Updated per ITAM TC Version 1.2b.				

The City of Irvine Guidelines utilizes VMT per capita (per employee) as the metric for all non-residential projects. The non-residential significance threshold is based on the countywide non-residential VMT trips divided by the countywide employment. 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 non-residential use, is utilized in this analysis.

Since the project consists entirely of non-residential uses, the Project is classified as a non-residential project and the VMT per capita (per employee) metric is applicable. As shown in **Table 3-4**, the existing countywide average for non-residential use is 48.66 VMT per capita (per employee) and the significance threshold established by the City of Irvine is 41.36 VMT per capita (per employee), 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.

3.2.4 ADDITIONAL SIGNIFICANCE THRESHOLDS

In addition, 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 development of multimodal transportation networks.
2. A diversity of land uses.
3. The reduction of GHG.

The development of multimodal transportation networks is evaluated by identifying existing pedestrian, bicycle and transit facilities that provide alternative modes of transportation in place of a single-occupancy vehicle. If the Project does not restrict or eliminates access the Project has a less than significant impact.

Land use impacts are typically addressed in area plans, specific plans, long range development plans or General Plans. If the Project is part of an existing plan and if the Project is complementary with the existing land use patterns, then the Project is assumed to have a less than significant impact.

The reduction of GHG is measured through compliance and consistency with the RTP/SCS. If the Project is consistent with the RTP/SCS, then the Project would have less than significant cumulative impact.

The significance criteria utilized here for qualitative analysis is summarized in previously referenced **Table 3-1.**

4 Transportation Impact Analysis

The following summarizes the findings of the screening evaluation and transportation impact analysis.

4.1 Screening Evaluation

Table 4-1 summarizes the findings of the screening evaluation. As shown in **Table 4-1,** the Project does not meet at least one of the screening criteria at this time. The Project is located within a half mile of a to a high-quality transit corridor; however, bus headways are currently greater than 15 minutes due to pandemic-related service reductions and it is unknown when normal bus operation will resume. In addition, the City of Irvine does not recognize the area as a TPA. Therefore, a VMT analysis has been prepared.

Table 4-1 Screening Evaluation Summary

Category	Description	Project	Meets Criteria?
Trip Generation (Small Project)	Does the Project generate less than 250 trips per day?	The Project results in approximately 551 trips per day.	No
Proximity to High Quality Transit (Transit Priority Area)	Is the Project within a half mile of high-quality transit stops or corridor, and meet the other four requirements: - Has a Floor Area Ratio of greater than 0.75 - Includes less parking than required by the jurisdiction - Is consistent with the RTP/SCS - Does not replace affordable housing units with a smaller number of moderate, or high-income residential units Is the Project in one of the two TPAs identified by the City of Irvine VMT Guidelines?	Yes, the Project is within a half mile from a high-quality corridor. Before March 2020, the Anteater Express M Line had service intervals no longer than 15 minutes during peak commute hours. However, current bus headways are every 30 minutes under pandemic conditions. The Project is not in one of the two TPAs identified by the City of Irvine.	Currently, no, due to the pandemic the Anteater Express is operating with reduced services.
Locally Serving Use	Is the Project 100,000 square feet or less of retail? Is the Project a daycare or K-12 local serving public school?	The Project is a University use and is not considered a locally serving use per the City of Irvine VMT Guidelines.	No
Affordable Housing	Does the Project consist of 100% affordable units?	The Project is a non-residential use	No
Map-Based (Low-VMT Area)	Is the Project in a low-VMT Area?	The City of Irvine does not use the map-based screening criteria, therefore no maps are available for the project area.	No

4.1.1 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 utilize 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 4-2** summarizes the trip rates and corresponding estimated trip generation for the proposed Project.

Table 4-2 Trip Generation Summary

Land Use	Amount	Units	AM Peak Hour			PM Peak Hour			ADT
			In	Out	Total	In	Out	Total	
Trip Rates									
Faculty/Staff	Person		0.12	0.01	0.13	0.03	0.11	0.14	1.47
Trip Generation									
Faculty/Staff	375	Per	44	4	48	11	41	52	551
Net Increase in Trips			**44**	**4**	**48**	**11**	**41**	**52**	**551**

Trip Rate Source: UCI Main Campus Traffic Model (MCTM)
ADT = average daily trips
Per = person

As shown in **Table 4-2** the Project would generate approximately 551 daily trips, 48 trips during the AM peak hour and 52 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.

4.1.2 PROXIMITY TO HIGH QUALITY TRANSIT

OPR's Technical Advisory suggests that a project can be presumed to have a less than significant impact 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 bus 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.

Three Anteater Express stops are located within a half mile walk of the Project site. The Project site is serviced by the M line. The closest bus stop is located less than a quarter mile walk on West Peltason Drive opposite Lot 84. Two other stops are within a half mile walk at the West Peltason Drive at Academy Way intersection (approximately 0.35 miles away) and East Peltason Drive at the Multipurpose Science and Technology Building (approximately 0.50 miles away).

Prior to March 2020 (pre-pandemic conditions) headways for the M Line were 6 to 10 minutes during the day and 25 minutes after 7:00 PM. Currently (January 2022), the M Line is operating on reduced service, with the first departure at 4:00 PM and the last departure at 10:30 PM with headways of 30 minutes. Therefore, under pre-pandemic conditions 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. However, since there is no indication on when normal service would resume, the Project is not presumed to be less than significant under this criteria.

In addition, the City of Irvine utilizes a similar screening criteria for projects located near high-quality transit. The City has identified two existing TPAs 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.

4.2 VMT Impact Analysis

A 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. The City of Irvine's impact analysis methodology and significance thresholds for a non-residential project are utilized (see previously referenced **Table 3-4** for City of Irvine significance thresholds).

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 in ITAM TC TAZ zone—TAZ 564. The Project's land use was added to the TAZ zone existing conditions (2018 baseline) and a full ITAM TC run was conducted. 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 non-residential VMT and the net change in total employees are used to estimate the Project change VMT rate per capita based on the existing condition as a baseline. 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.

The ITAM TC estimates do not account for TDM strategies already in place by the UCI campus, specifically, UCI's Sustainable Transportation Program discussed in Section 1.7. UCI's Sustainable Transportation Program is a project feature where employees of the Project would be eligible and encouraged to utilize the TDM programs offered by the UCI Transportation and Distribution Service. As noted in Section 1.7 approximately 67 percent of employees use more sustainable commuting options.

CAPCOA provides substantial evidence that TDM programs that are monitored and adjusted can achieve up to a 21% reduction in commute VMT. **Appendix C** summarizes the TDM programs available through

UCI's Sustainable Transportation Program, and an approximate VMT reduction based on CAPCOA's quantification methodology.

The City of Irvine recognizes participation in a TDM program (such as Spectrumotion and Irvine Business Complex) to achieve up to 5% reduction in VMT. Since UCI's Sustainable Transportation Program is a project feature, ITAM TC estimates are adjusted to conservatively include a 5% reduction in VMT.

Table 4-3 summarizes the ITAM TC VMT estimates for conditions with and without the Project.

Table 4-3 ITAM TC VMT Estimates

Area	Category	Baseline	Baseline (With Project[1])	Net Change
Non-Residential VMT				
Orange County	Non-Residential VMT	83,065,765	83,077,381	11,616
	Employment	1,707,045	1,707,315	270
Project Change VMT Rate (Non-Residential VMT per Employee)				43.02
Adjusted VMT Rate[2]				**40.87**
Source: ITAM TC [1] Project = 375 staff/faculty [2] 5% Reduction with UCI's Sustainable Transportation Program (See **Appendix B** for the ITAM TC Project VMT Summary Report Worksheet).				

As shown in **Table 4-3,** ITAM TC estimates that the net change of non-residential VMT is 11,616 under conditions with the Project. ITAM TC also estimates that the Project would result in a net increase in employment of 270 with the Project. Therefore, the net change in non-residential VMT and total employment results in a Project change VMT rate of 43.02 VMT per capita (per employee). As noted above, the ITAM TC estimate does not account for TDM programs already in place. Therefore, the VMT rate was adjusted. The adjusted VMT rate is 40.87 VMT per employee.

Table 4-4 provides a comparison between the Project VMT per capita (per employee) and the significance threshold.

Table 4-4 VMT Impact Summary

Description	VMT per Employee
Adjusted Project Change VMT Rate (per Employee)	40.87
Countywide Average (Baseline)	48.66
Threshold of Significance (Baseline minus 15%)	41.36
Difference from Threshold of Significance	-0.49 or -1.1%
Is Project above or below Regional Threshold?	Below
Significant Impact?	No

As shown, the Project results in a VMT per capita (per employee) of 40.87. The threshold of significance is 41.36 VMT per capita (per employee). 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).

4.3 Multimodal Transportation Networks Impact 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.

A 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.

Sidewalks and shared use pathways will be provided on-site, providing pedestrian and bicycle access. Sidewalks and pedestrian pathways are site development design features that will make walking comfortable and a low-stress option.

In regard to bicycle accessibility, the Project is accessible by bike lanes on Michael Drake Drive. West Peltason Drive and California Avenue are also bicycle accessible roadways. This allows bicycles to access the Project and also get in and around the 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.

There are also bus transit stops available for students, staff, and visitors 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. Sidewalks will be provided which will link to those on-campus within the Health Science Campus and off campus to Michael Drake Drive, providing good pedestrian access. 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 based on the multimodal transportation screening threshold.

4.4 Land Use Impact Analysis

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.

Another 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 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,

[1] 2007 Long Range Development Plan, A Framework to Guide Physical Development at the University of California, Irvine, Through 2025-2026, November 2007.

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.

4.5 RTP/SCS Consistency (Cumulative Impact Analysis)

The Project has also been evaluated with consideration to consistency with SCAG's Regional 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 2020 SCAG's Regional Council adopted Connect SoCal. 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 consistent with the land use designation in 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.

5 Conclusion

This transportation study was conducted to determine if the Project would result in a significant impact to transportation. Project screening, quantitative VMT impact analysis, and qualitative impact analyses were conducted.

Screening Evaluation – The Project does not meet at least one of the screening criteria at this time. The Project is located within a half mile of a to a high-quality transit corridor; however, Anteater Express bus headways are currently greater than 15 minutes due to pandemic-related reduced service and it is unknown when normal bus operation will resume. In addition, the City of Irvine does not recognize the area as a TPA. Therefore, a VMT analysis has been prepared.

VMT Impact Analysis – 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 VMT Guidelines, ITAM TC was used to estimate the net change in VMT and net change in employment to calculate what is referred to as the "Project change VMT rate" measured on a per capita basis (VMT per employee). Since ITAM TC does not consider project features that reduce VMT, such as UCI's Sustainable Transportation Program, the Project VMT rate was adjusted. The Project change VMT rate is calculated as 40.87 VMT per capita (per employee). The average baseline for non-residential is 48.66 VMT per capita (per employee) and the threshold of significance is 41.36 VMT per capita (per employee). 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.

Multimodal Transportation Impact 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, and bike amenities to encouraging biking. Since the Project is enhancing the multimodal transportation network, it would have less than significant impact.

Land Use Impact Analysis – The Project land use is 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 (Cumulative Impact Analysis) – The Project land use is consistent with UCI's 2007 LRDP and the City of Irvine's General Plan Zoning Map. 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. Therefore, the Project would be consistent with the adopted Connect SoCal and the Project would have a less than significant impact.

In summary, the Project's impact on transportation is shown to be less than significant.

6 References

1. University of California Irvine Long Range Development Plan 2007 Update Traffic Study, Austin-Foust Associates, Inc., May 2007.

2. University of California 2007 Long Range Development Plan A Framework to Guide Physical Development at the University of California, Irvine, Through 2025-2026, Office of Campus and Environmental Planning, University of California Irvine, November 2007.

4. Sustainable Transportation Webpage, UCI transportation and Distribution Services, https://www.parking.uci.edu/AT/incentives/ , last accessed June 2019.

5. Technical Advisory on Evaluating Transportation Impacts on CEQA, California's Office of Planning and Research, December 2018.

6. 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.

7. OP 17: Employee Commute Modal Split, University of California, Irvine, The Sustainability Tracking, Assessment and Rating System, https://reports.aashe.org/institutions/university-of-california-irvine-ca/report/2018-03-28/OP/transportation/OP-17/ , last accessed August 2021.

8. City of Irvine's 2015 Active Transportation Plan, City of Irvine, April 2015.

9. CEQA Manual Volume III. Technical Appendices, City of Irvine, April 2020

10. CEQA VMT Impact Analysis Guidelines, City of Irvine, April 2020

11. SB 743 Implementation VMT Technical Appendix Version 1.4, City of Irvine, May 2020.

12. 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

ADT Trip Rate					
Land Use	Unit	Rate A	Rate B	Rate A Description	Rate B Description
Faculty & Staff	PER	0.85	1.9	Proportion of Commuters	Person Trips / Commuter
Faculty/staff average vehicle occupancy of 1.1 persons per vehicle					

Project ADT Trip Generation					
Land Use	Amount	Unit	Rate A (375*0.85)	Rate B (319*1.9)	Total (606/1.1)
Faculty & Staff	375	PER	319	606	551
Total					**551**

Peak Hour Trip Rates (Percent of ADT)				
	AM Peak Hour		PM Peak Hour	
Land Use	Inbound	Outbound	Inbound	Outbound
Academic Use - Faculty & Staff	8.00%	0.70%	2.00%	7.50%

Project Peak Hour Trip Generation							
	AM Peak Hour			PM Peak Hour			
Land Use	Inbound	Outbound	Total	Inbound	Outbound	Total	ADT
Total Trips	**44**	**4**	**48**	**11**	**41**	**52**	**551**

Note:
Trip Rate Source: UCI Main Campus Traffic Model

Appendix B ITAM Project VMT Summary Report

ITAM PROJECT VMT SUMMARY REPORT

V 1.2b-101221

PROJECT INFORMATION	Project #:	Project	
	Name:	Existing 2018 + UCI Falling Leaves Project	
	Description:	Academic Building	
	Type:	Non-Residential	

			Baseline	Project
Vehicle Miles Travelled (VMT)	ORANGE COUNTY	Total	139,404,388	139,416,790
		Population	56,338,624	56,339,409
		Employment	83,065,765	83,077,381
Population and Employment		Population	3,218,615	3,218,615
		Employment	1,707,045	1,707,315
Δ VMT (With Project - No Project)		Total		12,402
		Population		786
		Employment		11,616
Δ Population & Employment Caused by Project		Population		-
		Employment		270
VMT Rate Threshold Goal[1]		Residential	**14.88**	
		Non-Residential	**41.36**	
Project Δ VMT Rate[1]		Residential		
		Non-Residential		43.02
			Applicable Measure(s)	**43.02**
			Threshold Goal	**41.36**
			Net VMT Rate Percentage Increase[2]	**3.86%**
			Mitigation required?	**Yes**

MITIGATION MEASURES			
On-Site		☐	2.5%
Off-Site		☑	5.0%
Additional Mitigation[3]		☐	
Significant VMT Impact?	**-1.1%**		**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.

Appendix C UCI's TDM Program CAPCOA Quantification Methodology

No.	UCI TDM Program Category	CAPCOA Category	Estimated Reduction (Standalone)
1	Carpool matching through WAZEpool Carpool incentive program for employees and graduate students (free parking for carpools)	Part of the overall TRT-2 Implement Commute Trip Reduction Program – Required implementation and Planning	No standalone reduction is taken for this individual strategy.
2	Ride-share through Zimride (a private ride-sharing network for UCI)	TRT-3 Provide Ride - Sharing Programs Range of Effectiveness = 1-15% commute VMT reduction.	100% of employees are eligible to participate = 10% reduction Assuming 25%-50% employee participation = **2.5% - 5% reduction.**
3	Zipcar car sharing program with 16 cars and over 6,000 on campus members (the University's carshare)	TRT-9 Implement Car-Sharing Program Range of Effectiveness = 0.4 – 0.7% commute VMT reduction.	UCI has less people per car than CAPCOA's example, with 375 members per car = 6.9% reduction. 100% of employees are eligible to participate = 6.9% reduction Assuming 25%-50% employee participation = **2.8% - 3.5% reduction.**
4	OC Vanpools at UCI (also known as "super carpools" subsidized in part by OCTA and operated through a third-party provider, "Commute with Enterprise") Guaranteed Ride Home Program	TRT-11 Provide Employer-Sponsored Vanpool/Shuttle Effectiveness = 0.3 – 13.4% commute VMT reduction.	100% of employees are eligible to participate = 13.4% reduction Assuming 25%-50% employee participation = **3.4% - 5.4% reduction.**
5	Convenient cost-effective options to reduce monthly transportation expenses for University students and employees UCI – OC University Bus Program (provides unlimited access to the OCTA bus system) "University Pass" transit program with 80% subsidy for unlimited OCTA ridership and coordination OCTA of routes 20% rebate on commuter Metrolink and Amtrak train passes	TRT-4 Provide Subsidized or Discounted Transit Program Range of Effectiveness = 0.3 – 20% commute VMT reduction.	100% of employees are eligible to participate = 7.3% reduction Assuming 25%-50% employee participation = **1.8% - 3.7% reduction.**
6	Anteater Express (UCI's campus shuttle service with live bus tracking), in 2019 UCI shuttle system ridership was 2.2 million passengers at a cost of $2.8 million UCI Medical Campus shuttle route (provides rides to UCI Medical Hospital located outside of the campus	Grouped Strategy: TST-4 Increase Transit Service Frequency/Speed TST-5 Provide Bike Parking Near Transit TST-6 Provide Local Shuttles Range of Effectiveness = .02 – 2.5% commute VMT reduction.	Assuming 25% reduction in headways = **.04% reduction** Assuming 50% reduction in headways = **.07% reduction**

7	UCI Zotwheels bike ridesharing service (currently offline due to expansion) Bicycle program highlights include BikeUCI Ambassadors, the most comprehensive peer-to-peer outreach program for biking in the country; over 3,000 bike parking spaces; significant investment in bikeway infrastructure; bicycle education for campus affiliates of all bicycling levels offered quarterly; and major bi-annual bike education festivals to encourage safe and legal riding Provide end of trip facilities for bike riders	Grouped Strategy TRT-12 Bike Sharing Programs LUT-9 Improve Design of Development SDT-5 Incorporate Bike Lane Street Design (On-site) TRT- 5 Provide end of trip facilities	Since this service is currently offline due to expansion, no reduction is taken.
8	Occasional-Use Parking Permits for Sustainable Transportation Members valid at unmarked or AR reserved parking stall	Grouped Strategy TRT-8 Implement Preferential Parking Permit Program	No reduction is taken since this strategy is grouped with other strategies.
9	Telecommute, working remotely and alternative work schedules.	TRT-6 Encourage Telecommuting and Alternative Work Schedules Range of Effectiveness = 0.07%-5.50% commute VMT reduction.	Due to the nature of the Project, this would be limited to administrative employees. 5% of employees participate in a 9-day 80 hour work week = **0.35% reduction** And 5% of employees participate in a 4-day 40 hour work week = **0.75% reduction** And 1% of employees participate in 1.5 days telecommute = **0.22% reduction** And Total **1.32% reduction**
10	Implement Commute Trip Reduction Marketing. Introduction to UCI offered programs at employee orientation.	TRT-7 Implement Commute Trip Reduction Marketing Range of Effectiveness = 0.08%-4.0% commute VMT reduction.	100% of employees would be eligible to UCI services: **4.0% reduction**.
Total			**Low Range = 14.9%** **High Range = 20.9%**
The calculated reductions do not sum up total since each strategy are multiplicative and not additive. Overall % VMT Reduction = 1-(1-A)*(1-B)*(1-C) where A, B, C equals reductions for individual strategies			