COMMUNITY DEVELOPMENT DEPARTMENT **PLANNING DIVISION**

ADMINISTRATIVE DRAFT MITIGATED NEGATIVE DECLARATION

CRAIG APARMENTS PROJECT
INITIAL STUDY/MITIGATED NEGATIVE DECLARATION

December 2023

Lead Agency:
City of Buena Park
6650 Beach Boulevard
Buena Park, CA 90621
Swati Meshram, Planning Manager
(714) 562-3614

Consultant:
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SECTION 1: PROJECT INFORMATION

1. **Project Number:** General Plan Amendment (GPA-22-1), Zone Change (Z-22-1), Site Plan (SP-22-13), and Mitigated Negative Declaration (MND-22-1)

2. **Project Title:** Craig Apartments Project

3. **Hearing Date:** February 14, 2024

4. **Lead Agency:** City of Buena Park
   Community Development Department
   Planning Division
   6650 Beach Boulevard
   Buena Park, CA 90621

5. **Contact Person:** Harald Luna, Senior Planner
   Phone Number: (714) 562-3618

6. **Project Location:** 7682, 7692, 7712, and 7722 Craig Avenue, City of Buena Park, Orange County, California.

   The Project site is a vacant 0.69-acre lot located at 7682, 7692, 7712, and 7722 Craig Avenue, in the City of Buena Park, Orange County, California, Assessor Parcel Numbers (APNs): 066-132-09, -15, -16, and 17; refer to **Exhibit 1, Regional Vicinity**. The Project site has been heavily disturbed, and no native habitat nor ornamental habitat occurs onsite. The Project site is surrounded by single-family residential dwelling units (DU) to the north and west, with Craig Avenue directly adjacent to the north, commercial uses to the east and southeast; and the Brea Creek to the south; refer to **Exhibit 2, Project Location and Site Vicinity**. The site is relatively flat with an elevation of approximately 77 feet above mean sea level (AMSL). The nearest natural water source is the Brea Creek just south of the Project site.

7. **Project Applicant/Project Sponsor's Name and Address:**

   Andmore Partners
   Contact: Sean Mo
   3530 Wilshire Boulevard, #1830
   Los Angeles, California 90010
   (213) 788-1175

8. **General Plan Designation:** LDR - Low Density Residential

9. **Zoning:** RS-6 - One-Family Residential

10. **Description of Project:** The Project involves the construction of two three-story buildings containing a total of 12 townhouse-style apartments. Each building would contain six apartments. The two buildings would be built in tandem, with one building (front building) fronting Craig Avenue and the second building (back building) accessed from an internal driveway south of the first building. The Project would total approximately 19,939 net square-feet (SF) of building space and would include drive-in vehicle garages at ground level and two above ground floors of living space. The Project would include perimeter landscaping and green space buffering the Project from the single-family residential dwelling unit to the west. The Project would include pedestrian walkways, visitor parking, and perimeter/security fencing and lighting; refer to **Exhibit 3, *Site Plan*** and **Exhibit 4a, *Ground Floor Plan, Exhibit 4b, Second Floor Plan,* 4c, *Third Floor Plan and Exhibit 4c, Roof Plan***.

Construction

Project construction would occur in one phase. The duration of construction activities for the Project would be approximately twelve months, beginning in October 2024, and culminate construction in October 2025.

Site Access

Regional access is provided on Interstate 5 (I-5) via the Beach Boulevard ramps. Local access is provided via Beach Boulevard (Highway 39) and Craig Avenue. Main Project site vehicular access would be provided via one 20-foot-wide paved driveway located on the northeast corner of the site on Craig Avenue. The Project driveway would be designed in accordance with the City of Buena Park Municipal Code (BPMC) Sections 18.92.010 (Access Requirements) and 19.436.040 (Residential Driveway Standards), by providing emergency vehicle access and mobility through a 25-foot-wide internal driveway.

Parking

The Project would provide a total of 36 automobile parking spaces. As noted in Table 2, 24 of the parking spaces would be indoor (garage) parking spaces and 12 would be outdoor (visitor) parking spaces. Outdoor parking spaces would be mainly consolidated along the western portion of the Project site.

Building Design, Elevations and Landscaping

The architectural design for the Project assumes light and warm-toned materials, such as wood siding cedar, painted stucco in white, and fiber cement panels (slate look), board form concrete, and glass, which is consistent to the surrounding neighborhood. This warmth is repeated in its large open windows, the balconies, and the landscaping. The buildings would utilize individualization to break volume massing to create unique building identity. The building would subtract upper story volume to reduce vertical height physically and visually from pedestrian level, and the Project would add green space to beautify ground level and upper terraces to provide visual and auditory buffer with landscaping. The total building height is 30 feet 6 inches; refer to **Exhibit 5a, Elevations and Materials and Exhibit 5b, Elevations and Materials (Driveway View)**.

Approximately 36 percent of the 0.69-acre site would be landscaped. Landscaping around the buildings would include irrigated trees and various low water use shrubs and ground cover. Landscaping around the perimeter of the site would include additional trees (e.g., Natchez Crepe myrtle, Fruitless Olive, and Red Push Pistache) and groundcover including shrubs and grasses (e.g., Lemonade Berry, French Lavender, Star Jasmine, Golden Breath of Heaven, De la Mina Verbena, and Breeze Dwarf Mat Rush). The Project also provides a large landscape buffer from the single-family residential home located to the west with the use of the trees and a block wall. A lawn area would be provided on the west most portion of the site and walking path throughout the perimeter of the site; refer to **Exhibit 6, Landscape Plan**.

Lighting

Indoor and outdoor Project site lighting would be used to provide adequate lighting for living space areas, circulation, and security. Outdoor lighting for the parking areas would be provided consistent with the requirements set forth in the City's Municipal Code Section 19.548.030, Lighting which requires that lighting is controlled to prevent glare on driveways, walkways, and public thoroughfares. A lighting plan is required by the City which would be submitted with construction plans.

Infrastructure and Off-site Improvements

The site is in an existing urban developed area served by existing utilities. The Project site would be served via water, sewer, and utility extensions, as available, to the Project site from existing

lines located in Craig Avenue. The Project would include the addition of a new concrete sidewalk and parkway along the south side of Craig Avenue – northerly adjacent to the Project site.

Project Approvals

The City of Buena Park is the Lead Agency under the California Environmental Quality Act (CEQA) and is responsible for reviewing and approving the Initial Study/Mitigated Negative Declaration (IS/MND). The City will consider the following discretionary approvals for the Craig Apartments Project:

- **General Plan Amendment (GP-22-1)** to change the existing land use designation from Low Density Residential (LDR) to High Density Residential (HDR).
- **Zone Change (Z-22-1)** to change the existing zoning district from RS-6 (One-Family Residential) to RM-20 (Medium-Density Multifamily Residential).
- **Site Plan (SP-22-13)** to review the proposed multi-family development.

Additional permits will be required upon review of construction documents. Other permits required for the Project include, but are not limited to, the issuance of building permits, encroachment permits for driveways, sidewalks, and utilities; security and parking area lighting; building permits; grading permits; and permits for new utility connections.

11. Surrounding land uses and setting: Briefly describe the project's surroundings:

The Project site has an existing Low-Density Residential General Plan land use designation and a One-Family Residential (RS-6) zoning district and requires a General Plan Amendment (GP-22-1) to High Density Residential and a Zone Change (Z-22-1) to RM-20 as noted below in **Table 1**, **Existing and Proposed General Plan Land Use and Zoning**.

Table 1: Existing and Proposed General Plan Land Use and Zoning

Location	Existing General Plan Land Use Designation	Proposed General Plan Land Use Designation	Existing Zoning District	Proposed Zoning District
Project Site	Low-Density Residential (LDR)	High-Density Residential (HDR)	One-Family Residential (RS-6)	Medium-Density Multifamily Residential (RM-20)
North	Low-Density Residential (LDR)	No Change	One-Family Residential (RS-6)	No Change
South	Office Professional (OP) and Open Space (OS)	No Change	Commercial (CO) and Open Space (OS)	No Change
East	Office Professional (OP)	No Change	Commercial (CO)	No Change
West	Low-Density Residential (LDR)	No Change	One-Family Residential (RS-6)	No Change

Source:
City of Buena Park. *Zoning and Land Use App*. Available at https://maps.buenapark.com/portal/apps/webappviewer/index.html?id=285c8763af614002abda80cffcd1c536. Accessed August 26, 2022.
General Plan. 2035. *Housing Element, Table 27: Residential Categories and Zoning Districts.*

Refer to **Table 2**, **Proposed Project General Summary**, which includes a breakdown of building heights and landscaping, among other Project details. Additionally, refer to **Table 3**, **Proposed Building Units Breakdown**.

Table 2: Proposed Project General Summary

Project Element	Proposed Project
General Plan Land Use Designation	High Density Residential (RMH)
Zoning District	Medium-Density Multifamily Residential (RM-20)
Site Area APN: 066-132-09 APN: 066-132-15 APN: 066-132-16 APN: 066-132-17 Total Site Acreage:	 7,568.24 SF 7,833.48 SF 7,340.70 SF 7,340.70 SF 30,083 SF (0.69 acres)
Floor Ground Floor (Garage) Second Floor Third Floor Total Building Area:	 7,983 SF 8,522 SF 7,296 SF 23,801 SF (Gross)
Floor Area Ration (FAR)	0.79
Lot Coverage	30.1 percent
Landscaping	11,037 SF (approx. 36% of Project site)
Building Height	30'-6"
Parking Stalls Standard Parking Accessible (Including 1 van Access) Compact Total:	 30 1 5 36 (24 indoor garage spaces and 12 outdoor spaces)
Source: Andmore Partners. September 28, 2023.	

Table 3: Proposed Building Units Breakdown

Unit	Square Feet (Gross)
1	2,013
2	2,028
3	2,013
4	2,028
5	2,013
6	2,146
7	2,084
8	2,084
9	2,069
10	2,069
11	2,069
12	2,069
Total	24,685

12. Other public agencies whose approval is required (e.g., permits, financial approval, or participation agreement.):

- Orange County Fire Authority (OCFA)

13. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significant impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

On December 12, 2022, the City provided written notices to interested California Native American tribes on the list provided by the Native American Heritage Commission (NAHC). Consistent with the NAHC list, California Native American Tribes were contacted pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18. The following tribes were notified: Campo Band of Diegueno Mission Indians, Ewiiaapaaya Band of Kumeyaay Indians, Gabrieleno Band of Mission Indians – Kizh Nation, Gabrieleno Tongva Indians of California Tribal Council, Gabrieleno Tongva Nation, Gabrieleno Tongva San Gabriel Band of Mission Indians, Gabrieleno Tongva Tribe, Juaneno Band of Mission Indians Acjachemen Nation – Belardes, Juaneno Band of Mission Indians Acjachemen Nation, La Posta band of Diegueno Mission Indians, Manzanita Band of Kumeyaay Nation, Mesa Grande Band of Diegueno Mission Indians, Pala Band of Mission Indians, Santa Rosa Band of Cahuilla Indians, and Soboba Band of Luiseno Indians.

As of January 12, 2022, only one written response was received from the Gabrieleno Band of Mission Indians – Kizh Nation on January 4, 2023, which noted that the Project site is in their Ancestral Tribal Territory and therefore is seeking further consultation with the Lead Agency. Please refer to Section 18, Tribal Cultural Resources, for further details on Tribal Consultation.

14. Other Environmental Reviews Incorporated by Reference in this Review:

a. Buena Park General Plan 2010 (GP)
b. Final and Draft 2035 General Plan
c. Technical Studies:
   i) Kimley Horn and Associates. 2022. *Air Quality and Greenhouse Gas Analysis*. Provided as **Appendix A1.**
   ii) Kimley Horn and Associates. 2022. *Health Risk Assessment*. Provided as **Appendix A2.**
   iii) ELMT Consulting. November 6, 2022. *Habitat Assessment*. Provided as **Appendix B.**
   iv) BCR Consulting. October 19, 2022. *Cultural Resources Assessment*. Provided as **Appendix C.**
   v) Kimley Horn and Associates. 2022. *Energy*. Provided as **Appendix D.**
   vi) SASSAN Geosciences. September 19, 2019. *Preliminary Geotechnical Engineering Investigation and Liquefaction Study*. Provided as **Appendix E.**
   vii) Kimley Horn and Associates. 2022. *Noise Analysis*. Provided as **Appendix F.**
   viii) Pacific Geotech. August 21, 2023. *Water Quality Management Plan*. Provided as **Appendix HG.**
   ix) Kimley-Horn and Associates. November 10, 2022. *Trip Generation and Vehicle Miles Traveled Memorandum*. Provided as **Appendix H.**

15. Acronyms

AFY -	Acre-Feet Per Year
AB -	Assembly Bill
ADT -	Average daily traffic
AELUP -	Airport Environs Land Use Plan
ALUC -	Airport Land Use Commission
AQMP -	Air Quality Management Plan
BMP -	Best Management Practice
BPPD -	Buena Park Police Department
BPSD -	Buena Park School District
CAAQS -	California Ambient Air Quality Standards
CalEEMod -	California Emissions Estimator Model

CALFIRE - California Department of Forestry and Fire Protection
Caltrans - California Department of Transportation
CARB - California Air Resources Board
CBC - California Building Code
CCAA - California Clean Air Act
CCR - California Code of Regulations
CEQA - California Environmental Quality Act
CNEL - Community Noise Equivalent Level
CO - Carbon monoxide
CSDLAC - County Sanitation Districts of Los Angeles County
CUPA - Certified Unified Program Agency
COA- Condition of Approval
DAMP - Drainage Area Management Plan
DIF - Development Impact Fees
DOC - California Department of Conservation
DPM - Diesel particulate matter
DTSC - California Department of Toxic Substances Control
EIR - Environmental Impact Report
EOP - Emergency Operations Plan
EPA - Environmental Protection Agency
FAR - Floor Area Ratio
FCAA - Federal Clean Air Act
FEMA - Federal Emergency Management Agency
FEIR - Draft Environmental Impact Report
FHWA - Federal Highway Administration
FMMP - Farmland Mitigation and Monitoring Program
FTA - Federal Transit Administration
GIS - Geographic Information System
GHG - Greenhouse Gas
GPA - General Plan Amendment
GPD - Gallons Per Day
HVAC - Heating, ventilation, and air conditioning
2035 GP - 2035 General Plan
IS - Initial Study
ITE - Institute of Transportation Engineers
LHMP - Local Hazard Mitigation Plan
LOS - Level of service
LST - Localized Significance Thresholds
MBTA - Migratory Bird Treaty Act
MC - Municipal Code
MLD - Most Likely Descendent
$MTCO_2e$/year Metric tons of carbon dioxide equivalent per year
MWD - Metropolitan Water District
NAAQS - National Ambient Air Quality Standards
NAHC - Native American Heritage Commission
NO_x - Nitrogen oxides
O_3 - Ozone
OCFA - Orange County Fire Authority
OCFCD - Orange County Flood Control District
OCSD - Orange County Sanitation District
OCTA - Orange County Transportation Authority
OCWD - Orange County Water District

OPR - Office of Planning & Research, State
OSHA - U.S. Occupational Safety and Health Administration
$PM_{2.5}$ - Fine particulate matter
PM_{10} - Particulate matter
ppm - Parts per million
PPV - peak particle velocity
RCNM - Roadway Construction Noise Model
ROG - Reactive organic gases
RTP/SCS - Regional Transportation Plan/Sustainable Communities Strategy
RWQCB - Regional Water Quality Control Board
SB - Senate Bill
SCAB - Southern California Air Basin
SCAG - Southern California Association of Governments
SCCIC - South Central Coastal Information Center
SCAQMD - South Coast Air Quality Management District
SCH - State Clearinghouse
SF - Square feet
SKR-HCP - Stephens' Kangaroo Rat - Habitat Conservation Plan
SRA - Source receptor area
SWPPP - Storm Water Pollution Prevention Plan
TAC - Toxic air contaminant
TPA - Transit priority area
USDA - United States Department of Agriculture
USGS - United States Geological Survey
UWMP - Urban Water Management Plan
VHFHSZ - Very High Fire Hazard Severity Zone
VOC - Volatile organic compounds
VMT - Vehicle miles traveled
WQMP - Water Quality Management Plan
ZC - Zone Change

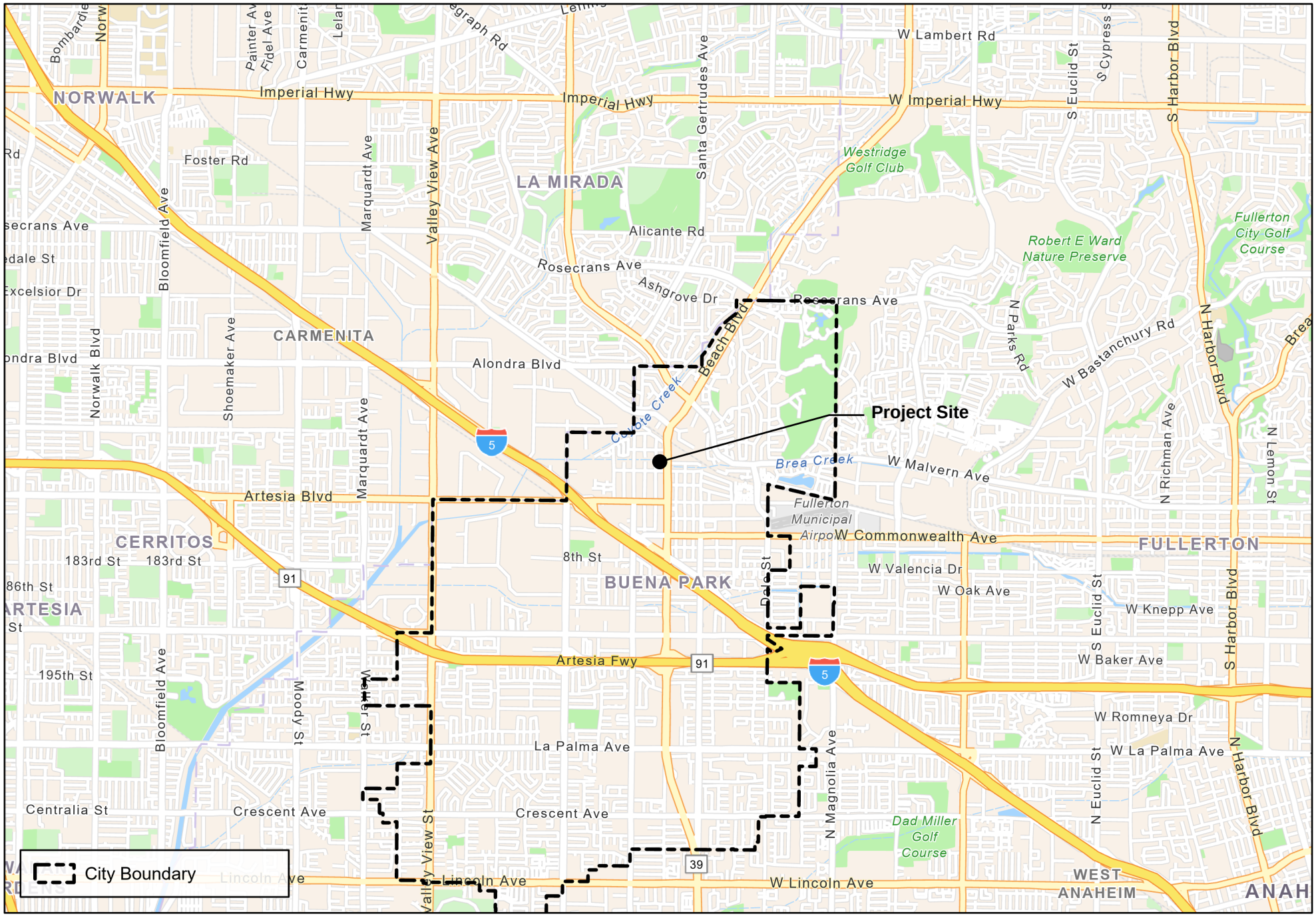
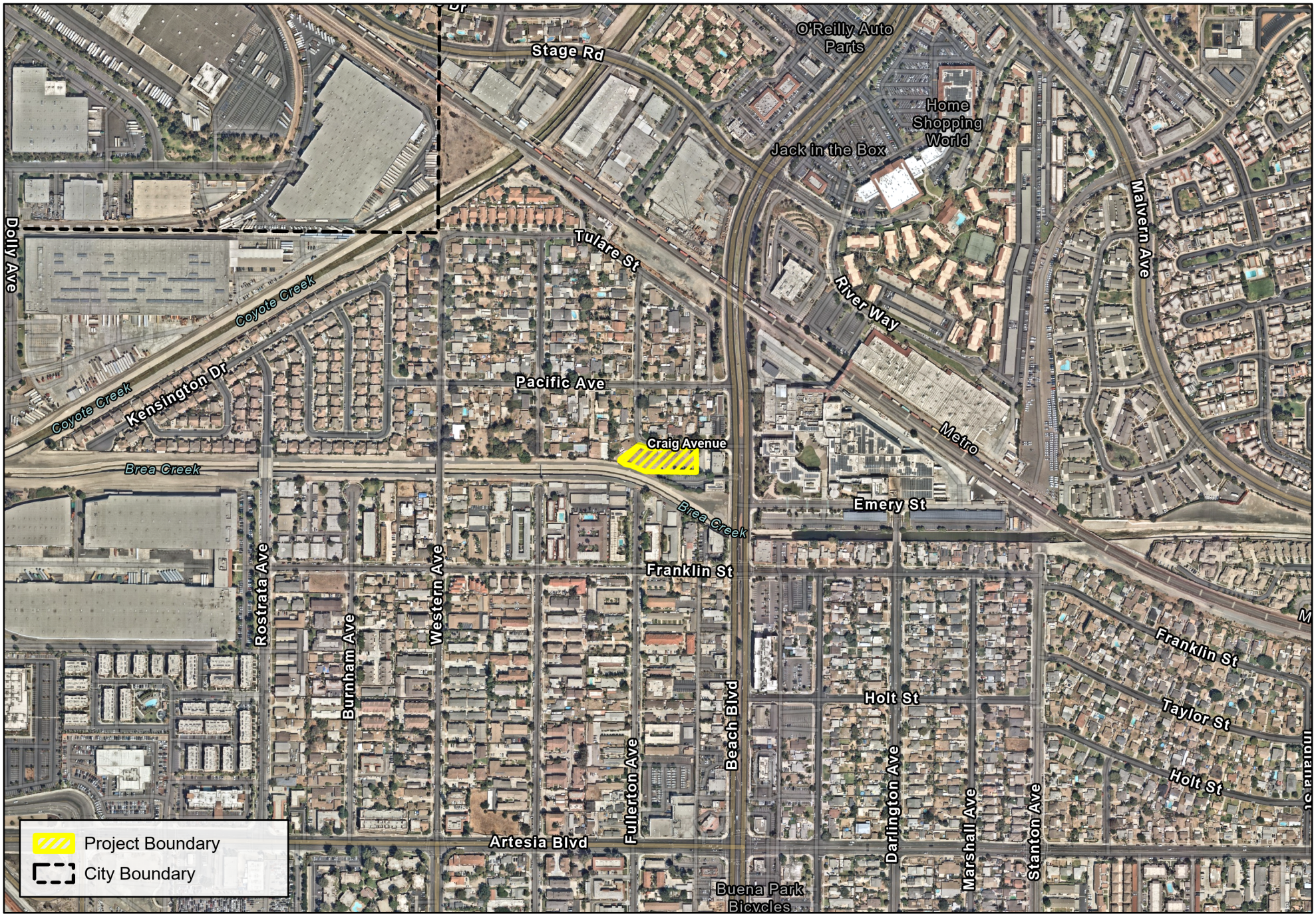


EXHIBIT 1: Regional Vicinity
Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn

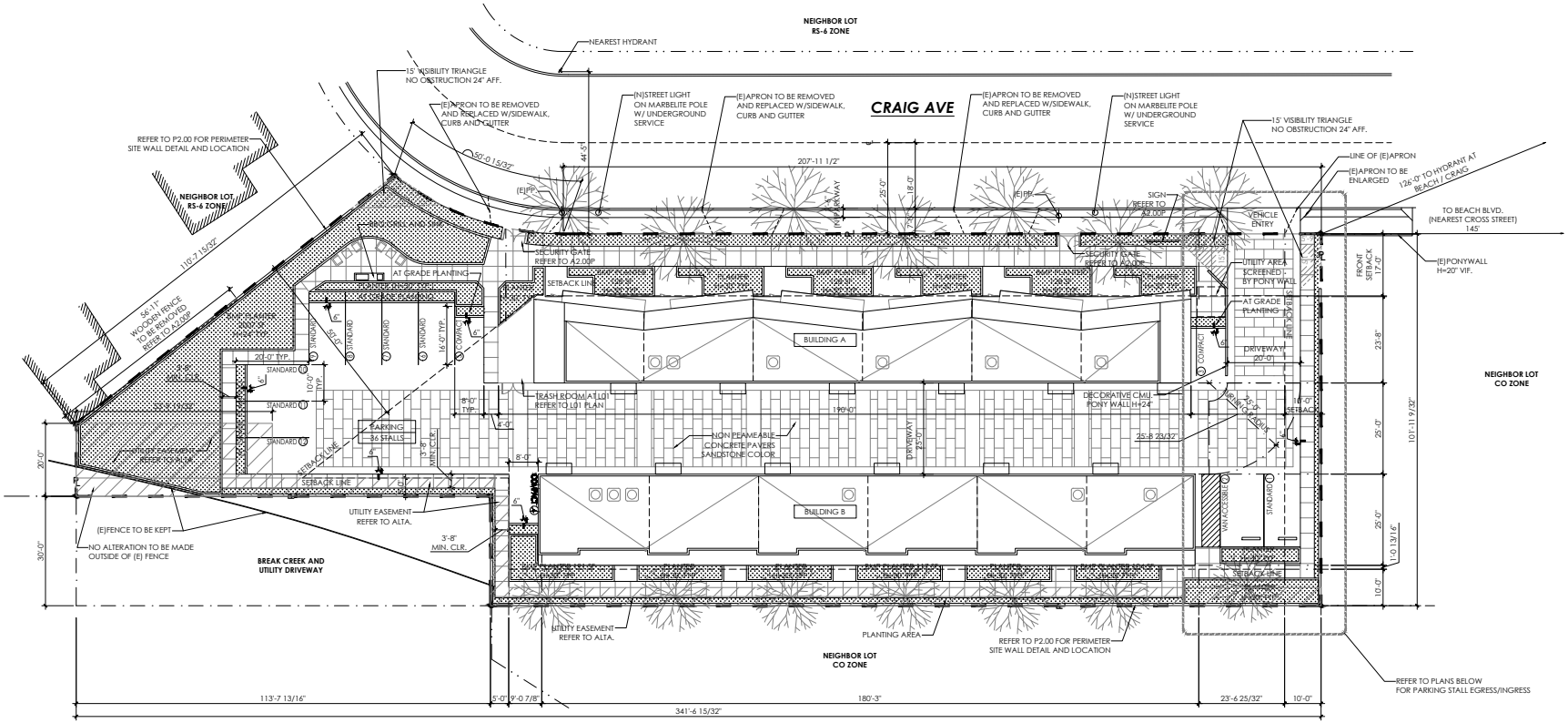


Source: Nearmap, 2022

EXHIBIT 2: Project Location and Site Vicinity
Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn



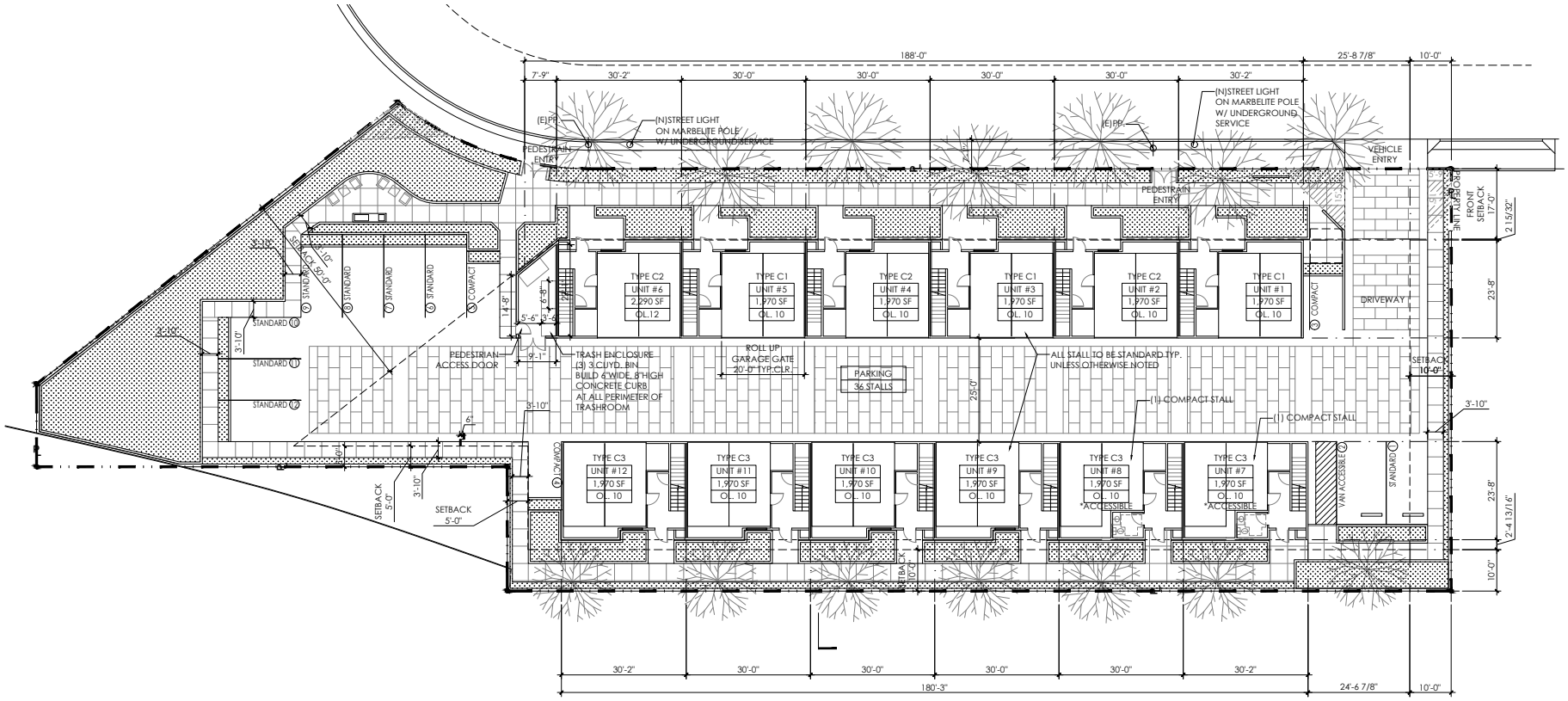
Source: Andmore Partners, 09/28/2023

EXHIBIT 3: Site Plan

Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn



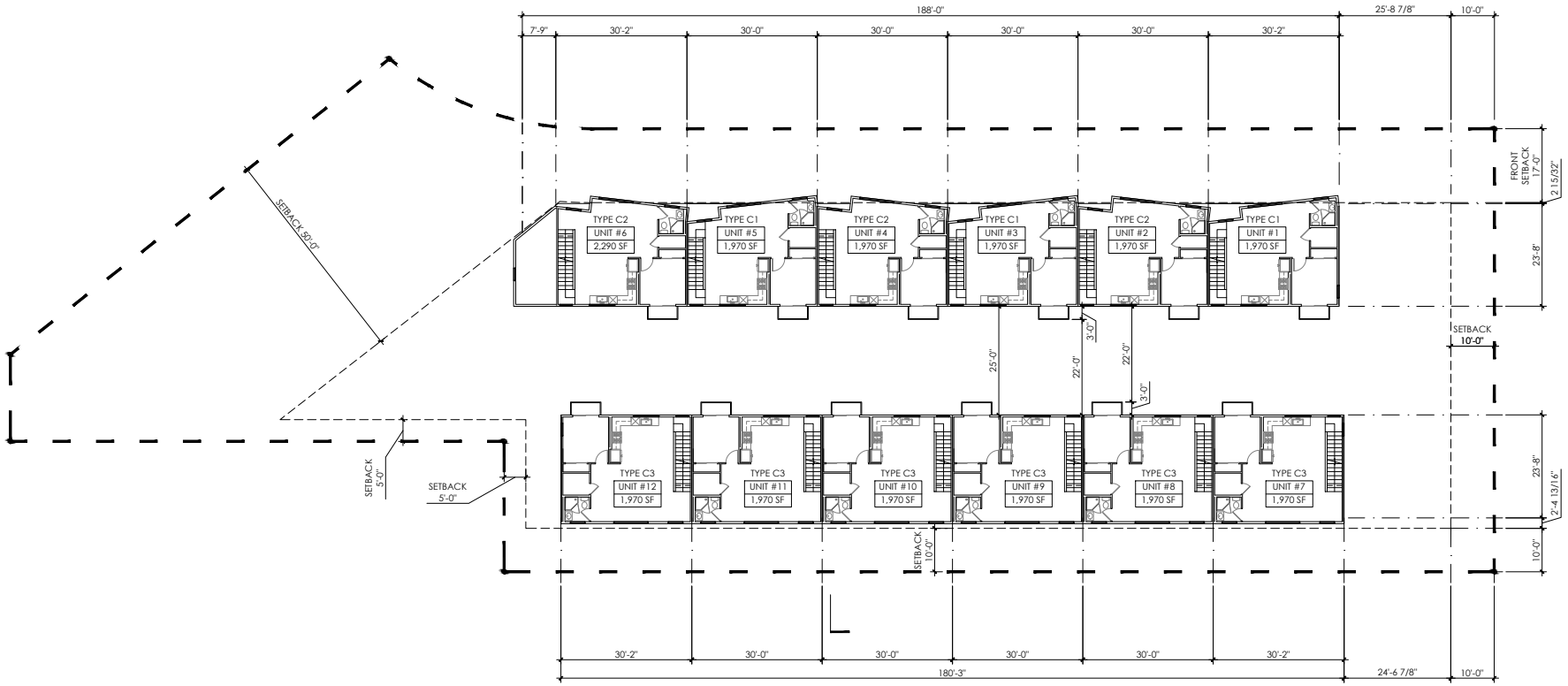
Source: Andmore Partners, 09/28/2023

EXHIBIT 4a: Ground Floor Plan

Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn

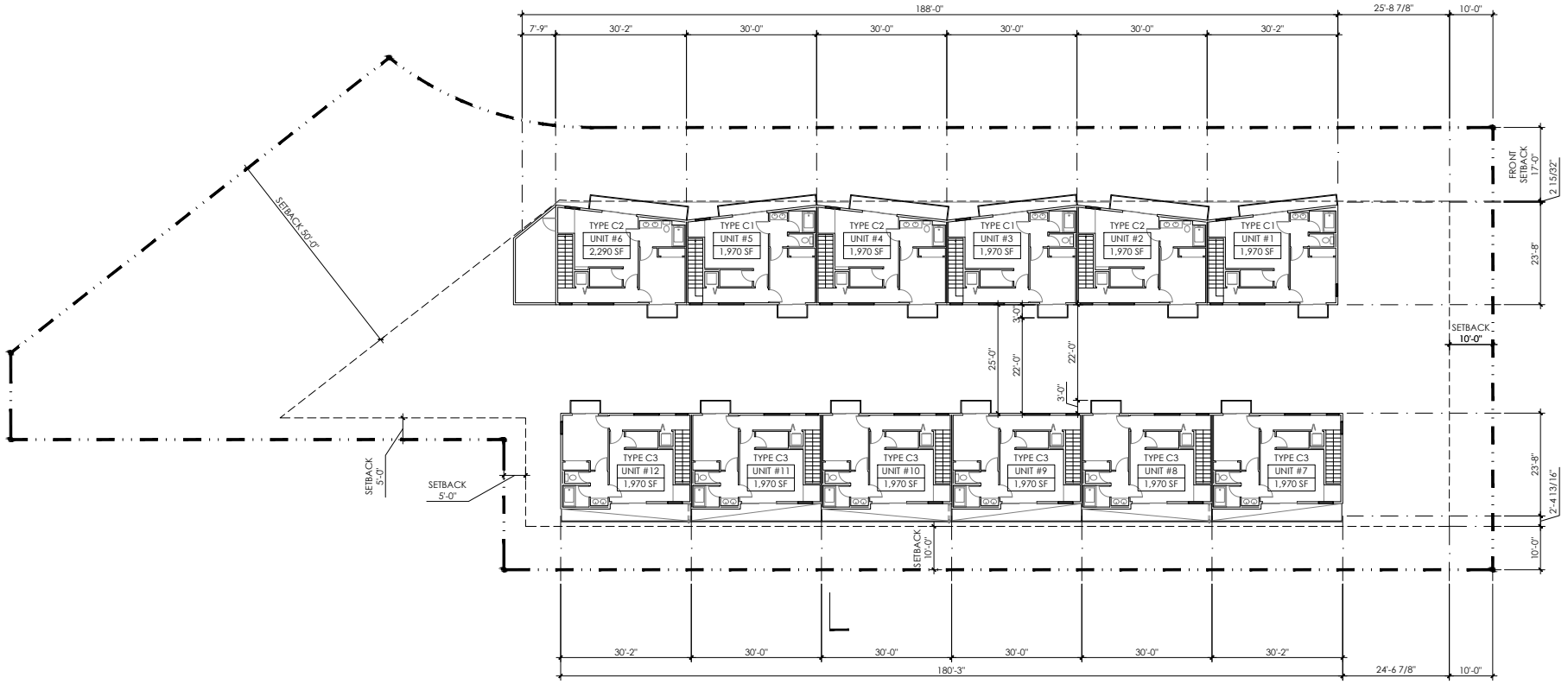


Source: Andmore Partners, 09/28/2023

EXHIBIT 4b: Second Floor Plan
Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn



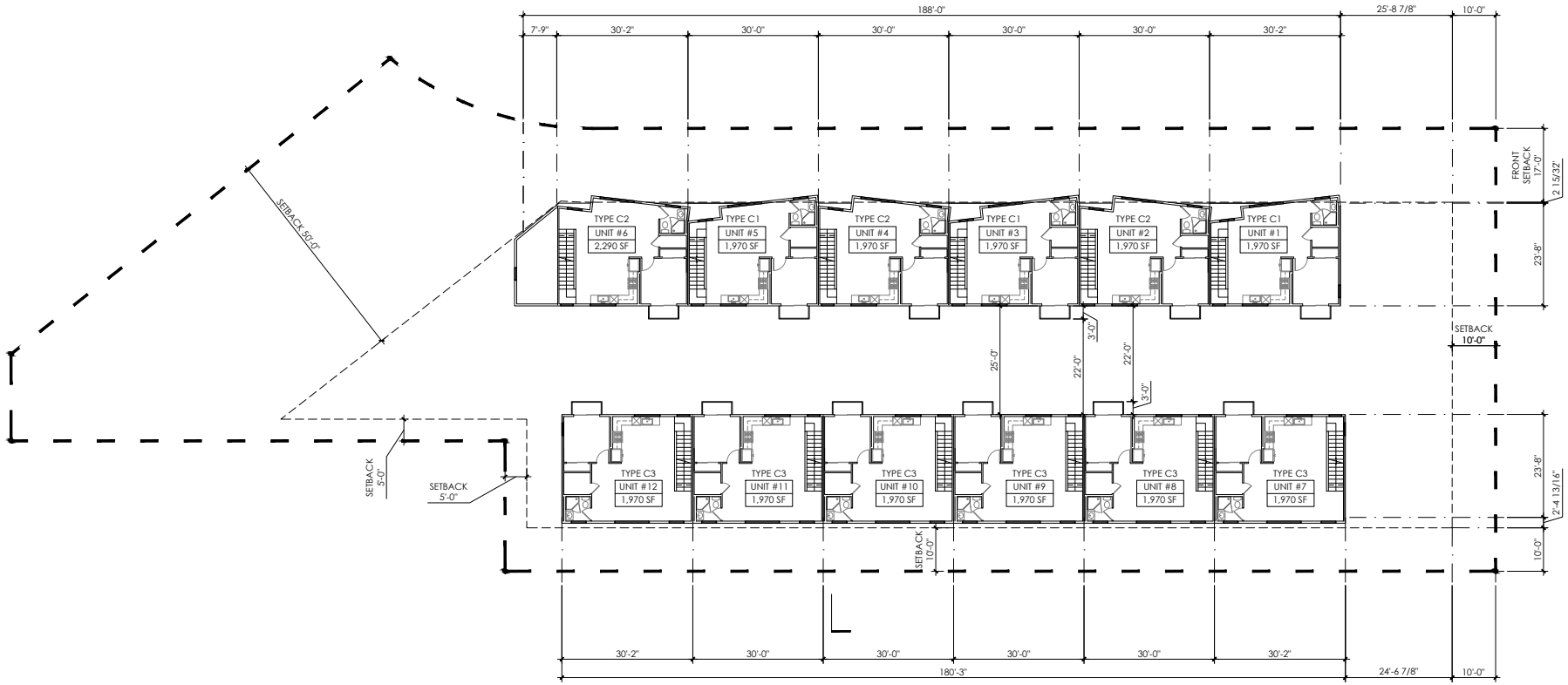
Source: Andmore Partners, 09/28/2023

EXHIBIT 4c: Third Floor Plan

Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn



Source: Andmore Partners, 09/28/2023

EXHIBIT 4d: Roof Plan

Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn



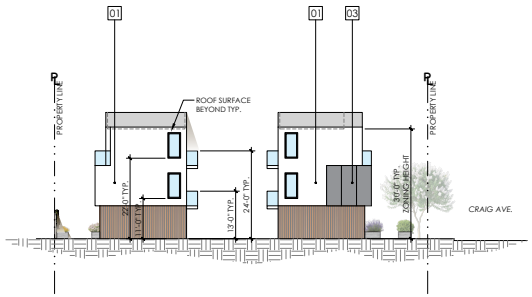
NORTH ELEVATION ALONG CRAIG AVENUE

SCALE 1/16" = 1'-0" 1



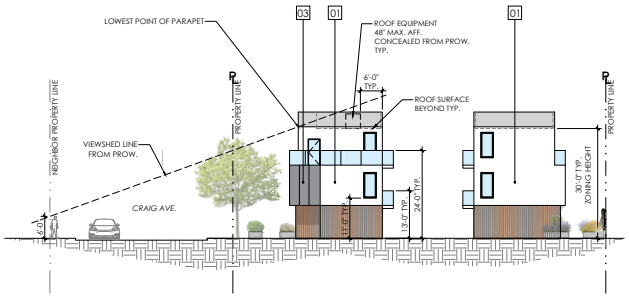
SOUTH ELEVATION

SCALE 1/16" = 1'-0" 2



EAST ELEVATION

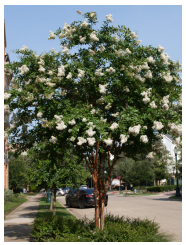
SCALE 1/16" = 1'-0" 4



WEST ELEVATION

SCALE 1/16" = 1'-0" 3

PLANT PALETTE



Lagerstroemia 'natchez'
"Natchez Crepemyrtle"



Rhus integrifolioa
"Lemonade Berry"



Lavender x Intermedia 'Grosso'
"French Lavender"



Olea europaea 'Swan Hill'
"Fruitless Olive"



Trachelospermum jasminoides
"Star Jasmine"



Lomandra longifolio 'Breeze'
"Breeze Dwarf Mat Rush"



Pistacia x Red Push
"Red Push Pistache"



Verbena lilacina 'De La Mina'
"De la Mina Verbena"



Coleonema pulchellum
'Sunset + Gold'
"Golden Breath of Heaven"

MATERIALS

01 STUCCO PAINTED DUNN EDWARDS DE08 CLASSIC WHITE

02 METAL PAINTED DUNN EDWARDS DE635 BLACK TIE

03 FIBERCEMENT PANEL EQUITONE TE85

04 WOOD SIDING CEDAR

05 BOARD FORM CONCRETE

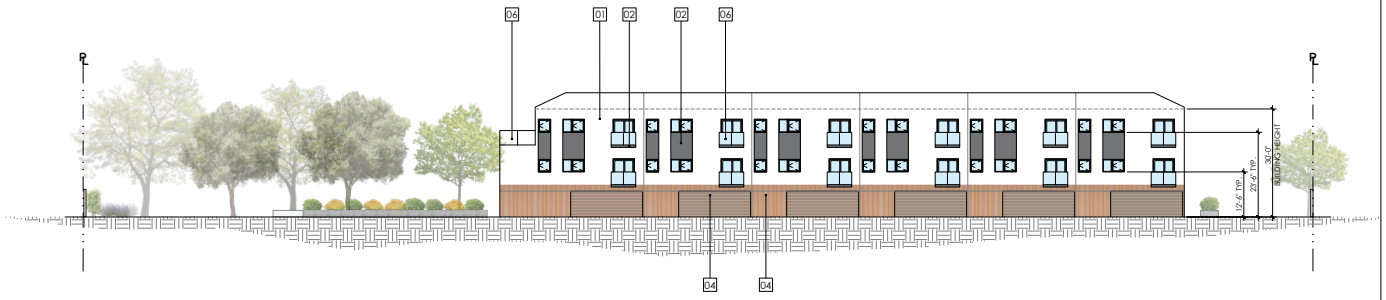
06 GLASS GUARDRAIL

ELEVATIO NOTE:
REFER TO A5.01 FOR WINDOW & SITE WALL DETAIL

Source: Andmore Partners, 2/15/2023

EXHIBIT 5a: Elevations and Materials
Craig Apartments Project, City of Buena Park

Kimley»Horn



DRIVEWAY NORTH ELEVATION

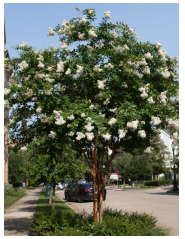
SCALE 1/16" = 1'-0" 1



DRIVEWAY SOUTH ELEVATION

SCALE 1/16" = 1'-0" 2

PLANT PALETTE



Lagerstroemia 'natchez'
"Natchez Crepemyrtle"



Rhus integrifolioa
"Lemonade Berry"



Lavender x Intermedia 'Grosso'
"French Lavender"



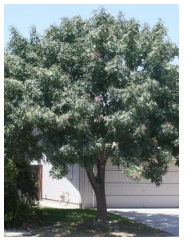
Olea europaea 'Swan Hill'
"Fruitless Olive"



Trachelospermum jasminoides
"Star Jasmine"



Lomandra longifolio 'Breeze'
"Breeze Dwarf Mat Rush"



Pistacia x Red Push
"Red Push Pistache"



Verbena lilacina 'De La Mina'
"De la Mina Verbena"



Coleonema pulchellum
'Sunset + Gold'
"Golden Breath of Heaven"

MATERIALS

01 STUCCO PAINTED
DUNN EDWARDS
DE08 CLASSIC WHITE

04 WOOD SIDING
CEDAR

02 METAL PAINTED
DUNN EDWARDS
DE635 BLACK TIE

05 BOARD FORM
CONCRETE

03 FIBERCEMENT PANEL
EQUITONE TE85

06 GLASS
GUARDRAIL

ELEVATIO NOTE:
REFER TO A5.01 FOR WINDOW & SITE WALL DETAIL

Source: Andmore Partners, 2/15/2023

EXHIBIT 5b: Elevations and Materials
Craig Apartments Project, City of Buena Park

Kimley»Horn



Source: Andmore Partners, 09/28/2023

EXHIBIT 6: Landscape Plan

Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn

SECTION 2: INITIAL STUDY CHECKLIST

SECTION 2.1: ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

☐ Aesthetics	☐ Agriculture & Forestry Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☒ Geology & Soils	☐ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☐ Hydrology & Water Quality	☐ Land Use & Planning	☐ Mineral Resources
☐ Noise	☐ Population & Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities & Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

Based on this initial evaluation which reflects the independent judgment of the City of Buena Park, it is recommended that:

The City of Buena Park finds that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

The City of Buena Park finds that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared. ☒

The City of Buena Park finds that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required. ☐

The City of Buena Park finds that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ☐

The City of Buena Park finds that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required. ☐

Signature _____ Date 12/20/2023

Printed Name & Title Harald Luna / Senior Planner For City of Buena Park

SECTION 2.2: EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a. **Earlier Analysis Used.** Identify and state where they are available for review.
   b. **Impacts Adequately Addressed.** Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c. **Mitigation Measures.** For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measure which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used, or individuals contacted should be cited in the discussion.

8) The explanation of each issue should identify:
   a. the significance criteria or threshold, if any, used to evaluate each question; and
   b. the mitigation measure identified, if any, to reduce the impact to less than significance.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS Except as provided in Public Resources Code Section 21099, would the project:				
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒

1a. Response: (*Source: 2035 General Plan EIR Section 5.3 – Aesthetics, Light, and Glare)*

No Impact. According to page 5.3-1 of the 2035 General Plan (GP) EIR the City's topography is relatively flat, and the City itself is densely developed such that distant views are obstructed. The dominant visual character of the City is characterized by buildings and adjacent roadways. Furthermore, the City of Buena Park General Plan does not identify scenic vistas. The proposed Project would not be in an area designated as an official scenic vista, nor would it block the view of a scenic vista from an adjacent facility or residents in the vicinity. Therefore, there would be **no impact**.

b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

1b. Response: (*Source: 2035 General Plan EIR Section 5.3 – Aesthetics, Light, and Glare)*

No Impact. The California Department of Transportation (Caltrans) California Scenic Highways does not officially designate scenic highways within the City that could be affected by the Project. The nearest State Scenic Highways are an eligible portion of State Route (SR)-57, located approximately 7 miles northeast from the Project site; an officially designated portion of SR-91, located in the City of Anaheim approximately 10 miles east of the Project site; and an eligible portion of SR-1, located within the City of Long Beach approximately 10 miles southwest of the Project site. According to page 5.3-1 of the 2035 GP EIR, neither Caltrans or the County of Orange identify any designated or eligible scenic highways within Buena Park or in its immediate vicinity. Finally, there are no significant natural scenic resources on the site as this site was previously fully developed with four single-family residential dwelling units. Currently, the site is devoid of any structures or native/natural habitat. The site does not contain rock outcroppings or historic buildings. Therefore, there would be **no impact**.

c. In non-urbanized areas, 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 a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐

1c. Response: (*Source: 2035 General Plan Open Space and Recreation Element; 2035 General Plan EIR Section 5.3 – Aesthetics, Light, and Glare)*

Less than Significant Impact. The Project site is currently vacant and was previously developed with single-family residences typical of the surrounding land uses. The proposed Project would involve the construction of 2 three-story 12-unit townhouse-style apartments that would be visible from Craig Avenue northerly adjacent to the Project site, from Beach Boulevard (Highway 39) east of the Project site, from Pacific Avenue and Fullerton Avenue north of the Project site, and from Fullerton Avenue south of the Project site. Publicly accessible views of the Project site from these viewsheds would be characterized by two modern-style apartment buildings measuring 30 feet high and pedestrian-oriented landscaping and setbacks. Although the Project site would substantially alter the existing character of the site, it would not result in potentially significant damage to the existing aesthetic quality of the Project surroundings because the Project would introduce a development that would greatly improve the existing vacant site conditions. The Project would provide a multi-family development which aside from the two buildings being aesthetically appealing and with soft building facade materials like natural wood, stone, and paint color that is neutral which blends well with neighboring uses, the Project would also provide perimeter landscaping throughout the north, south, east and

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

west portions of the site. Landscaping would include a combination of ornamental landscaping, green space along the western portion of the site, and mature trees. Additionally, the Project would improve the existing sidewalk and residential entrances would be providing along the main street frontage. Lastly, Project parking would be provided via private garages and additional parking would also be provided onsite which would minimize on-street parking. The commercial building to the west and multi-family developments to the south are of similar height at two stories than the proposed Project. As such, the introduction of the Project would not create much difference between the commercial building and the Project. The architectural style of the proposed buildings, including the landscaping, has been designed to increase cohesion between the Project and the surrounding single-family residences and commercial buildings. Project design utilizes setbacks, greenery and landscaping, and building/parking lot orientation that would make the development pedestrian-oriented and scaled appropriately to the surrounding development.

The proposed Project is consistent with the implementation of the 2035 GP goals and policies and will be subject to Design Review through the Site Plan Review process. The proposed Project is in an urbanized portion of the City with residential uses to the north, south and west of the Project site and commercial uses to the east. As noted in **Table 1**, **Existing and Proposed General Plan Land Use and Zoning,** the Project site currently has a Low-Density Residential (LDR) General Plan land use designation and One-Family Residential (RS-6) zoning district. The Project proposes a General Plan Amendment to amend the existing General Plan land use designation from Low-Density Residential (LDR) to High-Density Residential, and a Zone Change (ZC) to change the existing zoning district from One-Family Residential (RS-6) to Medium-Density Multifamily Residential Zone (RM-20). The Project would be reviewed by the City to ensure that it meets all of the required standards and policies from the GP and zoning regulations. As such, the proposed Project would not conflict with the applicable zoning district or other regulations governing scenic quality. With compliance to the 2035 GP Goals and Policies, and due to these factors, impacts on the visual character and quality of the area are **less than significant**.

d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

1d. Response: (*Source: Title 19 of the Buena Park Municipal Code and Zoning Ordinance)*

Less than Significant Impact. The Project site does not currently emit any lighting as the site is vacant. However, the site is exposed to existing lighting sources from commercial uses to the west, residential uses to the north and west, and from street lighting. The proposed Project will introduce new lighting to the currently vacant site. While not a substantial source of light, the Project would include indoor and outdoor site lighting as means to provide adequate lighting for living areas, circulation, and security. The City Municipal Code Sections 19.344.030, 19.444.030, 19.548.030, and 19.648.030, include standards that address the provision of lighting in the various residential and non-residential zones. Generally, the standards state that lighting on premise shall be directed, controlled, screened, or shaded from trespass onto surrounding properties. Moreover, building materials would not be reflective in nature which could cause glare impacts. As such, the Project would not create a new source of substantial light or glare that would adversely affect day or nighttime view in the area and impacts are anticipated to be **less than significant**.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
2. AGRICULTURE AND FORESTRY RESOURCES				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒

2a. Response: (*Source: 2035 General Plan Conservation and Sustainability Element; General Plan EIR Section 8 – Effects Found Not To Be Significant;* California Department of Conservation *Important Farmland Finder; https://maps.conservation.ca.gov/dlrp/ciff/*)

No Impact. The Project is in an urbanized residential area of the City. The site was formerly developed with 4 single-family residential dwelling units and is currently vacant. Additionally, the site is identified as urban/built-up land by the California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP), and therefore does not support agricultural resources or operations. There are no FMMP-designated Prime Farmland, Unique Farmland, or Farmland of Statewide Importance located within the City of Buena Park. Additionally, there are no agricultural resources or operations, including farmlands within proximity of the Project site. Implementation of the Project would not result in the conversion of farmland to a non-agricultural use. Therefore, the Project would have **no impact** on agricultural uses.

b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

2b. Response: (*Source: 2035 General Plan Conservation and Sustainability Element; General Plan EIR Section 8 – Effects Found Not To Be Significant; Orange County General Plan Chapter VI. Resources Element – Figure VI-2 Orange County Agricultural Preserves: https://ocds.ocpublicworks.com/service-areas/oc-development-services/planning-development/codes-and-regulations/general-plan*)

No Impact. As noted above in Response 2(a), the Project site is within a fully built environment. A review of Figure VI-2, Orange County Agricultural Preserves, of the Orange County General Plan Resources Element shows that the Project site is not located within an area that is under a Williamson Act Preserve or under a Williamson Act Contract. The Project would not conflict with existing zoning for agricultural uses or any applicable Williamson Act contracts. Therefore, **no impacts** would occur.

c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
2c. **Response:** *(Source: 2035 General Plan Zoning Map for the City of Buena Park: https://maps.buenapark.com/portal/apps/webappviewer/index.html?id=285c8763af614002abda80cffcd1c536)* **No Impact.** Refer to Responses 2(a) and 2(b), above. The Project site and immediate surroundings north and west of the Project site are currently zoned Low-Density Residential (LDR). The Project site is in an urbanized area and is not zoned for forestland, timberland, or timberland production. No additional changes would occur from Project implementation that would conflict with existing zoning district for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. Therefore, **no impacts** would occur.				
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
2d. **Response:** *(Source: 2035 General Plan Zoning Map for the City of Buena Park: https://maps.buenapark.com/portal/apps/webappviewer/index.html?id=285c8763af614002abda80cffcd1c536)* **No Impact.** As stated in Response 2(c) above, the Project site is currently zoned Low-Density Residential (LDR), is located within an urbanized area and is surrounded by existing development. Neither the site nor its surroundings are zoned for forest land. Therefore, **no impacts** would occur.				
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
2e. **Response: (Source: 2035 General Plan; California Department of Conservation *Important Farmland Finder; https://maps.conservation.ca.gov/dlrp/ciff/*)** **No Impact.** As stated in Response 2(d) above, the Project is in an urbanized residential area of the City. Additionally, the site is identified as urban/built out land and therefore does not support agricultural resources or operations. The Project will not result in the conversion of designated farmland to non-agricultural uses, or forest land to non-forestland. In addition, there are no agricultural resources or operations, including farmlands within proximity of the subject site. Therefore, **no impacts** would occur.				

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3. AIR QUALITY				
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?	☐	☐	☒	☐

3a. Response: (*Source: Air Quality and Greenhouse Gas Analysis and Health Risk Assessment prepared by Kimley-Horn and Associates on December 12, 2022, provided as Appendix A1 and A2, respectively.)*

Less than Significant Impact. As part of its enforcement responsibilities, the United States Environmental Protection Agency (EPA) requires each state with nonattainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The State Implementation Plan 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 state and federal 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 is located within the Southern California Air Basin (SCAB), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required, pursuant to the Federal Clean Air Act (FCAA), to reduce emissions of criteria pollutants for which the SCAB is in nonattainment. To reduce such emissions, the SCAQMD drafted the 2016 Air Quality Management Plan (AQMP). The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. 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 2016 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 will 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 air quality standards or the interim emissions reductions specified in the AQMP.
- **Consistency Criterion No. 2**: The Project will not exceed the assumptions in the AQMP, or increments based on the years of the Project build-out phase.

According to the SCAQMD's CEQA Air Quality Handbook, the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus if it would interfere with the region's ability to comply with California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS).

The violations to which Consistency Criterion No. 1 refers are CAAQS and NAAQS. As shown in Table 4 and Table 5, the Project would not exceed construction or operational emission standards. Therefore, the Project would not contribute to an existing air quality violation. Thus, the Project would be consistent with Consistency Criterion No. 1.

Concerning Consistency Criterion No. 2, the AQMP contains air pollutant reduction strategies based on SCAG's latest growth forecasts at the time of AQMP adoption, and SCAG's growth forecasts were defined in

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

consultation with local governments and with reference to local general plans. The Project would require a General Plan Amendment to change the existing land use designation from Low-Density Residential (LDR) to High-Density Residential (HDR). Although the High-Density Residential land use designation proposes more intense development, the maximum population growth associated with Project implementation would be approximately 40 persons.[1] According to the California Department of Finance (CDF), the City's population decreased between 2021 and 2022, and forecasts the total population in the City to grow by approximately 6.27 percent by 2035. Therefore, the Project would not cause exceedances in the population growth projection assumed by the SCAQMD to develop the AQMP. Thus, the Project is consistent with Consistency Criterion No. 2.

Based on these criteria, the Project would not conflict with or obstruct implementation of the AQMP, and impacts would be **less than significant**.

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?	☐	☐	☒	☐

3b. Response: (*Source: Air Quality and Greenhouse Gas Analysis prepared by Kimley-Horn and Associates on December 12, 2022, provided as Appendix A1)*

Less than Significant Impact.

Construction Emissions

Construction associated with the proposed Project would generate short-term emissions of criteria air pollutants. The criteria pollutants of primary concern within the Project area include ozone (O_3)- precursor pollutants (i.e., reactive organic gases (ROG), nitrogen oxides (NO_X), particulate matter 10 (PM_{10}), and particulate matter 2.5 ($PM_{2.5}$). Construction-generated emissions are short term and of temporary duration, lasting only as long as construction activities occur, but would be considered a significant air quality impact if the number 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 for the Project is estimated to be approximately twelve months, as early as October 2024, and finishing in October 2025. The Project would construct 2 three-story 12–unit townhouse-style apartments with drive-in vehicle garages at ground level and two above ground floors of living space, common open space, and parking spaces. Construction-generated emissions associated with the proposed Project were calculated using the CARB- approved California Emissions Estimator Model (CalEEMod), which is designed to model emissions for land use development projects, based on typical construction requirements. See Appendix A1: Air Quality and GHG Analysis for more information regarding the construction assumptions used in this analysis. Predicted maximum daily construction-generated emissions for the proposed Project are identified in **Table 4, Project Construction Emissions**.

Table 4 shows that construction pollutant emissions would remain below their respective thresholds. While impacts would be considered less than significant, the proposed Project would also be subject to SCAQMD Rules 402, 403, and 1113, which prohibit nuisances, require dust control measures, and limit volatile organic

[1] California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2021-2022, with 2020 Benchmark, May 2022, https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2022/, accessed December 2022.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

compounds (VOC) content in paints, respectively. Compliance with the standards SCAQMD rules would further reduce specific construction-related emissions. As shown in Table 4, all criteria pollutant emissions would remain below their respective thresholds and impacts would be **less than significant**.

Table 4: Project Construction Emissions

Construction Year	Emissions (pounds per day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
2023	0.96	10.33	7.46	0.02	2.79	1.51
2024	5.04	6.07	7.55	0.01	0.43	0.30
Maximum Emissions	*5.04*	*10.33*	*7.55*	*0.02*	*2.79*	*1.51*
SCAQMD Threshold	75	100	550	150	150	55
SCAQMD Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:
1. 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; 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.

Source: CalEEMod version 2020.4.0. Refer to Appendix A, of the Air Quality/Greenhouse Gas Analysis for model outputs.

Operational Emissions

Operational emissions are typically associated with mobile sources (i.e., motor vehicle use) and area sources (such as the use of landscape maintenance equipment, hearths, consumer products, and architectural coatings). Energy source emissions would be generated from electricity and natural gas (non-hearth) usage. **Table 5, Project Operational Emissions** summarizes the operational emissions attributable to the proposed Project. As shown in Table 5, the Project's operational emissions would not exceed SCAQMD thresholds. Therefore, regional operational emissions would result in a **less than significant** long-term regional air quality impact.

Table 5: Project Operational Emissions

Source	Emissions (pounds per day)[1]					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Area	0.57	0.18	1.06	<0.01	0.02	0.02
Energy	<0.01	0.03	0.01	<0.01	<0.01	<0.01
Mobile	0.15	0.17	1.57	<0.01	0.41	0.11
Maximum Emissions	0.72	0.38	2.64	<0.01	0.43	0.13
SCAQMD Threshold	55	55	550	150	150	55
SCAQMD Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes:
1. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0, as recommended by the SCAQMD. Worst-case seasonal maximum daily emissions are reported.

Source: CalEEMod version 2020.4.0. Refer to Appendix A1 for the Air Quality/Greenhouse Gas Analysis for model outputs.

Tables 4 and 5 compare the Project emissions (construction and operational, respectively) to the SCAQMD thresholds and shows that established thresholds would not be exceeded. As a result, the proposed Project would not result in any new significant impacts or any new cumulative considerable net increase of any criteria

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. . Therefore, cumulative air quality emissions impacts are **less than significant**.				
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

3c. Response: (*Source: Air Quality and Greenhouse Gas Analysis prepared by Kimley-Horn and Associates on December 12, 2022, provided as Appendix A1)*

Less than Significant Impact. A significant impact may occur when a Project would generate pollutant concentrations to a degree that would significantly affect sensitive receptors, which include populations that are more susceptible to the effects of air pollution than the population at large. Exposure of sensitive receptors is addressed for the following situations: criteria pollutants; carbon monoxide (CO) hotspots; and toxic air contaminants (TACs, specifically diesel particulate matter [DPM]) from on-site construction.

Localized Construction Impacts

The nearest sensitive receptors to the Project are single-family residences located approximately 19 feet to the northwest, single-family residences located approximately 66 feet to the north, and multi-family residences located approximately 180 feet to the southwest of the Project site. 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 associated with project-specific level proposed projects.

Because 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 6, Equipment- Specific Grading Rates,** is used to determine the maximum daily disturbed acreage for comparison to LSTs.

For this Project, the appropriate Source Receptor Area (SRA) for the localized significance thresholds is the North Orange County (SRA 16) area since this area includes the Project site. LSTs apply to NO_X, CO, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5 acres in size. Based on the daily equipment modeled in CalEEMod, Project construction is anticipated to disturb approximately 1.5 acres in a single day. As such, the LSTs for a maximum daily disturbance of 1.5 acres were interpolated and used in this analysis.

Table 6: Equipment-Specific Grading Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Graded per 8-Hour Day	Operating Hours per Day	Acres Graded per Day
Grading	Tractor	1	0.5	8	0.5
	Graders	1	0.5	8	0.5
	Dozers	1	0.5	8	0.5
	Scrapers	0	0	0	0
Total Acres Graded per Day					1.5
Source: CalEEMod version 2020.4.0.					

SCAQMD's methodology indicates that "off-site mobile emissions from the Project should not be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The nearest sensitive receptor to the Project site is a single-family residence located 19 feet (5.8 meters) to the northwest of the Project site. LST

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 25 meters were used in this analysis for receptors closer than 25 meters. **Table 7, Localized Significance of Emissions**, presents the results of localized emissions during construction activity. Emissions of these pollutants on the peak day of construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, significant impacts would not occur concerning LSTs during construction activities.

Table 7: Localized Significance of Emissions

Source/Activity	Emissions (pounds per day)[1]			
	NO_x	CO	PM_{10}	$PM_{2.5}$
Construction Emissions				
Site Preparation 2023	6.19	3.92	0.45	0.23
Grading 2023	10.18	5.55	2.69	1.48
Building Construction 2023	6.42	7.10	0.32	0.29
Building Construction 2024	5.97	7.07	0.28	0.26
Paving 2024	5.23	7.03	0.24	0.23
Architectural Coating 2024	1.22	1.81	0.06	0.06
Maximum Daily Emissions	*10.18*	*7.10*	*2.69*	*1.48*
SCAQMD Localized Screening Threshold (1.5 acres of disturbance at 25 meters)	125	642	5	4
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
Operational Emissions				
On-Site Emissions (Area + Energy Sources)	0.21	1.07	0.02	0.02
SCAQMD Localized Screening Threshold (1 acres of disturbance at 25 meters)	103	522	1	1
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

Source: CalEEMod version 2020.4.0. Refer to Appendix A1 for model data outputs.

Localized Operational Impacts

According to the SCAQMD LST methodology, LSTs apply to on-site sources. LSTs for receptors located at 25 meters for SRA 16 were conservatively used in this analysis. The 1-acre LST threshold was used for the 0.69-acre Project site. The operational emissions shown in Table 7 include all on-site Project-related stationary sources (i.e., area and energy sources). The maximum daily emissions of these pollutants during operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, significant impacts would **not occur** concerning LSTs during operational activities.

Carbon Monoxide Hot Spots

An analysis of CO "hot spots" is needed to determine whether the change in the Level of Service (LOS) of an intersection 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.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Accordingly, with the steadily decreasing CO emissions from vehicles, even very busy intersections do not result in exceedances of the CO standard. An analysis prepared for CO attainment in the SCAB by the SCAQMD can assist in evaluating the potential for CO exceedances. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 AQMP. 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 AQMP 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 an average daily traffic (ADT) volume of approximately 100,000 vehicles per day, was modeled for CO concentrations. This modeling effort identified a CO concentration high of 4.6 parts per million (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 2003 CO hot spot analysis. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection even as it accommodates 100,000 vehicles daily, it can be reasonably inferred that CO hotspots would not be experienced at any vicinity intersections as the Project would generate 57 daily vehicle trips[2]. Therefore, impacts would be **less than significant.**

d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	☒

3d. Response: (*Source: Air Quality and Greenhouse Gas Analysis prepared by Kimley-Horn and Associates on December 12, 2022, provided as Appendix A1)*

No Impact. The Project would not expose a substantial number of people to objectionable odors because no odors are anticipated to be generated by the proposed use. Therefore, the Project would not result in other emissions adversely affecting a substantial number of people, and **no impact** would occur.

[2] Kimley-Horn. 2022. *Trip Generation and VMT Memo.*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
4. BIOLOGICAL RESOURCES Would the project:				
a. Has a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒

4a. Response: (*Source: 2035 General Plan Conservation and Sustainability Element; Biological Resources Assessment, prepared by ELMT Consulting on November 6, 2022, provided as Appendix B)*

No Impact. According to the 2035 GP Conservation and Sustainability Element, the Emery Borrow Fossil Pit within the Ralph B. Clark Regional Park – approximately 1.5-miles northeast of the Project site – supports the only area of native vegetation in the City of Buena Park. Additionally, no rare or endangered plant or animal species occur in the City of Buena Park and limited riparian habitats remain along the Brea Creek Channel south of Malvern Avenue. The segment of Break Creek southerly contiguous to the Project site is not specified by the General Plan as having riparian habitat. The Project site itself is vacant land that formerly supported 4 single-family residential dwelling units.

The Biological Resources Assessment prepared for the Project by ELMT Consulting on November 6, 2022, documents baseline conditions and assessed the potential for special-status plant and wildlife species to occur within the Project site that could pose a constraint to implementation of the proposed Project. A field investigation conducted on September 14, 2022, determined that evaluated habitat conditions within a 200-foot buffer around the Project site. Due to the existing site conditions, no native plant communities, natural communities of special concern, special-status plants, special-status wildlife, and special-status plant communities were observed on or adjacent to the Project site. The site has been subject to a variety of anthropogenic disturbances and was historically developed, which makes the site not have suitable habitat for any of the species identified as candidate, sensitive, or special status species refer to **Exhibit 7**, **Biological Habitat**. Therefore, **no impact** would occur to any species identified as a candidate, sensitive, or special status species.

b. Has a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service? c. Has 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?	☐	☐	☐	☒

4b and 4c. Response: (*Source: 2035 General Plan Conservation and Sustainability Element; Biological Resources Assessment, prepared by ELMT Consulting on November 6, 2022, provided as Appendix B)*

No Impact. As indicated in Response 4(a), the Project site is characterized by highly urbanized surroundings devoid of suitable habitats. According to the City of Buena Park General Plan Conservation and Sustainability Element, limited riparian habitats remain along the Brea Creek Channel south of Malvern Avenue. The Project site is bounded to the south by the Brea Creek Channel, a paved flood control channel. The segment of Brea Creek Channel southerly adjacent to the Project site is not specified by the General Plan as having riparian habitat. In addition, the Project site is separated from the concrete-lined Brea Creek by fencing. Project

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

development will be confined to the previously disturbed Project site area with no connection to the Brea Creek Channel.

According to the Biological Resources Assessment, no jurisdictional drainage and/or wetland features were observed on the Project site during the field investigation. Furthermore, no blueline streams[3], have been recorded on the Project site. Therefore, the Project would have **no impact** on any riparian habitat or sensitive natural community, including any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

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?	☐	☒	☐	☐

4d. Response: (*Source: 2035 General Plan Conservation and Sustainability Element; Biological Resources Assessment, prepared by ELMT Consulting on November 6, 2022, provided as Appendix B)*

Less than Significant Impact with Mitigation Incorporated. As discussed in Threshold 4(a), the City of Buena Park is highly urbanized and lacks native habitat throughout most of the City. Implementation of the Project would be confined to existing Project site boundaries (refer to Exhibit 2 and Exhibit 3) that have been heavily disturbed and are isolated from regional wildlife corridors and linkages. In addition, there are no riparian corridors, creeks, or useful patches of steppingstone habitat (natural areas) within or connecting the site to a recognized wildlife corridor or linkage. As such, implementation of the proposed Project is not expected to impact wildlife movement opportunities.

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests, or eggs). In order to protect migratory bird species, a nesting bird clearance survey should be conducted prior to any ground disturbance or vegetation removal activities that may disrupt the birds during the nesting season. Bird nesting season generally extends from February 1 through September 15 in southern California and specifically, April 15 through August 31 for migratory passerine birds. In general, projects should be constructed outside of this time to avoid impacts to nesting birds. If the Project cannot be constructed outside of nesting season, the Project site shall be surveyed for nesting birds by a qualified avian biologist prior to initiating the construction activities. Although the Project site does not provide habitat for migratory birds, for abundance of caution, Mitigation Measure (MM) **BIO-1** would be implemented, and a **less than significant impact** would occur.

Mitigation Measure:

MM BIO-1: Migratory Bird Treaty Act and Fish and Game Code

If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species

[3] National Wetlands Inventory. *Surface waters and wetlands.* Available at https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/.(Accessed September 19, 2022).

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

A less than significant impact would occur on migratory birds with implementation of Mitigation Measure BIO-1.

e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

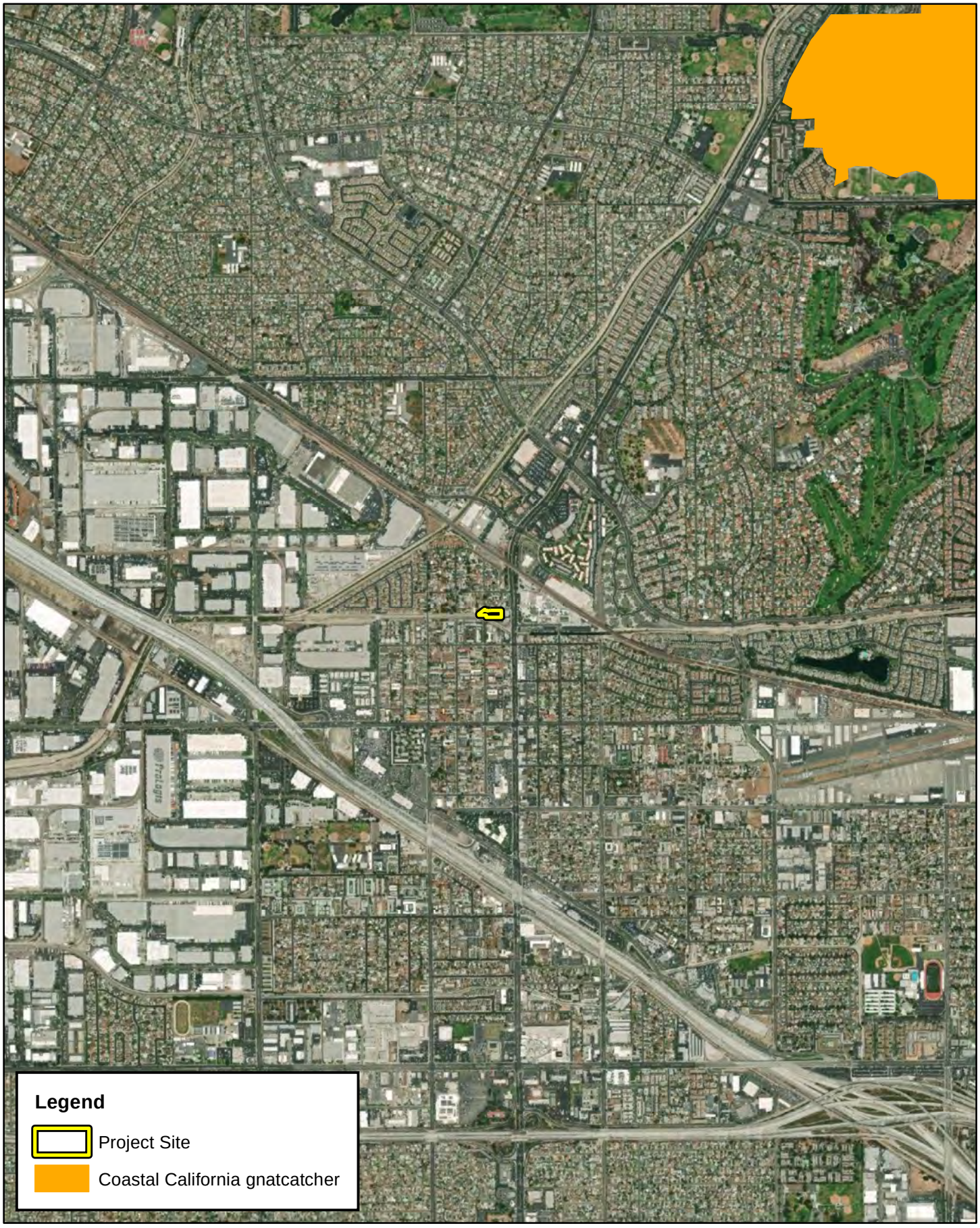
4e. Response: (*Source: Biological Resources Assessment, prepared by ELMT Consulting on November 6, 2022, provided as Appendix B)*

No Impact. According to the Biological Resources Assessment, the Project site is disturbed and is dominated by non-native grasses. Trees or other woody vegetation do not exist within the Project site, and no native plant communities exist that would be impacted from implementation of the proposed Project. Therefore, implementation of the proposed Project would not conflict with any local policies or ordinances protecting biological resources such as a tree preservation policy or ordinance. **No impact** would occur.

f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

4f. Response: (*Source: 2035 General Plan Conservation and Sustainability Element; Biological Resources Assessment, prepared by ELMT Consulting on November 6, 2022, provided as Appendix B)*

No Impact. The City of Buena Park is not subject to a habitat conservation plan. Therefore, there are **no impacts** to the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan.



Source: ELMT Consulting, 2022

EXHIBIT 7: Biological Habitat
Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
5. CULTURAL RESOURCES Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5 of the CEQA Guidelines?	☐	☐	☐	☒

5(a).Response: ***(Source: 2035 General Plan Conservation and Sustainability Element, Exhibit CS-1, Historic Resource Locations; General Plan EIR Section 5.10 Cultural Resources; Cultural Resources Assessment, prepared by BCR Consulting LLC, on October 19, 2022, provided as Appendix C)***

Less than Significant Impact According to the Cultural Resources Assessment prepared for the proposed Project, an intensive-level pedestrian cultural resources survey was undertaken on September 16, 2022, to locate and document previously recorded or new cultural resources, including archaeological sites, features, isolates, and historic-period buildings, that exceed 45 years in age within defined Project boundaries. During the field survey, BCR Consulting carefully inspected the Project site, and identified no cultural resources (including historic-period or prehistoric archaeological sites, or historic-period buildings) within its boundaries. Surface visibility was approximately 70 percent and sediments were dominated by silty sands. Vegetation included seasonal grasses, one fan palm, and two unidentified trees. The Project site has been subject to extensive disturbances associated with the construction and subsequent demolition and removal of four (4) former residences. No structures are present on the Project site and as such, no historical resources are present. **No impact** on historical resources would occur.

b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5 of the CEQA Guidelines?	☐	☒	☐	☐

5(b).Response: ***(Source: 2035 General Plan Conservation and Sustainability Element, Exhibit CS-1, Historic Resource Locations; General Plan EIR Section 5.10 Cultural Resources; Cultural Resources Assessment, prepared by BCR Consulting LLC, on October 19, 2022, provided as Appendix C; Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., on September 19, 2019, provided as Appendix F; Public Resources Code Section 7050.5-7055 and Section 5097.98; and the AB 52 and SB 18 Consultation)***

Less than Significant Impact with Mitigation. BCR Consulting completed an archaeological records search at the South- Central Coastal Information Center (SCCIC) on October 3, 2022. This included a review of all recorded historic and prehistoric cultural resources, as well as a review of known cultural resources, and survey and excavation reports generated from projects completed within one mile of the Project site. In addition, a review was conducted of the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and documents and inventories from the California Office of Historic Preservation including the lists of California Historical Landmarks, California Points of Historical Interest, Listing of National Register Properties, and the Inventory of Historic Structures. A review of aerial photos show that the Project site was formerly occupied by historic-period residences prior to 1953.

Data from the SCCIC revealed that six cultural resource studies have taken place, resulting in the recording of three cultural resources within a one half-mile radius of the Project site. The Project site has never been subject to previous cultural resources assessments, and no cultural resources have been previously recorded within its boundaries. The records search results are summarized in **Table 8, Cultural Resources Within One Half-Mile of the Project Site**, and a complete NAHC Sacred Lands File Search is provided in Appendix C of the cultural report which is also provided as Appendix C to this IS/MND.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 8: Cultural Resources Within One Half-Mile of the Project Site

USGS 7.5 Min Quadrangle	Cultural Resources Within 0.50 Mile of the Project Site
La Habra, California (1981)	P-19-188804: Historic-Period building (1/4 Mile NE) P-30-176663: Historic-Period Railroad (1/4 Mile E) P-30-120020: Historic-Period Refuse Scatter (1/4 Mile N)
Source: BCR Consulting, LLC. October 19, 2022. *Cultural Resources Assessment.*	

The records search and field survey did not identify any cultural resources (including prehistoric or historic archaeological sites or historic-period buildings) within the Project site. Furthermore, research results combined with surface conditions have failed to indicate sensitivity for buried cultural resources. Therefore, no significant impacts related to archaeological or historical resources are anticipated, and no further investigations are recommended for the Project site unless:

- the proposed Project is changed to include areas not subject to this study,
- the proposed Project is changed to include the construction of additional facilities,
- cultural materials are encountered during Project activities.

The Sacred Lands File Search conducted through the NAHC was negative which suggests that it is unlikely that cultural resources are found onsite. For more details, see Section 18, Tribal Cultural Resources. Although the Cultural Resources Assessment has not indicated sensitivity for cultural resources within the Project site boundaries, ground disturbing activities may have the potential to reveal unanticipated buried deposits not observed on the surface during previous surveys. As such, in abundance of caution, the implementation of the following Mitigation Measure CUL-1 and Standard Conditions (SC) 5.1 and 5.2, would be required.

Mitigation Measure:

MM CUL-1: Prior to the initiation of ground-disturbing activities, field personnel should be alerted to the possibility of buried prehistoric or historic cultural deposits. In the event that field personnel encounter buried cultural materials, work in the immediate vicinity of the find should cease and a qualified archaeologist should be retained to assess the significance of the find. The qualified archaeologist shall have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist finds that any cultural resources present meet eligibility requirements for listing on the California Register or the National Register, plans for the treatment, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

- historic artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects,
- historic structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements,
- prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates,
- groundstone artifacts, including mortars, pestles, and grinding slabs,
- dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks.

Standard Conditions

Although no impacts to historic or archaeological resources are anticipated because of the proposed Project there is a low potential for encountering such resources in the Project site, in abundance of caution, the applicant will be required to comply with the applicable policies and implementation measures prescribed in that document, including the following:

SC 5.1 Archaeological resources found prior to or during construction shall be evaluated by a qualified archaeologist, and appropriate mitigation measures applied, pursuant to Public Resources Code

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Section 21083.2 or 21084.1, as applicable, before the resumption of development activities. Any measures applied shall include the preparation of a report meeting accepted industry standards, which shall be submitted to the appropriate California Historical Resources Information System (CHRIS) Information Center (IC).

SC 5.2 During excavation and grading activities of any future development project, if archaeological resources are discovered, the project contractor shall stop all work and shall retain a qualified archaeologist to evaluate the significance of the finding and appropriate course of action. Salvage operation requirements pursuant to Section 15064.5 of the CEQA Guidelines shall be followed and the treatment of discovered Native American remains shall comply with State codes and regulations of the Native American Heritage Commission.

Therefore, the Project would have a **less than significant** impact on archaeological resources with implementation of MM CUL-1 and SC 5.1 and 5.2.

c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

5c. Response: (*Source: 2035 General Plan EIR Section 5.10 Cultural Resources; Public Resources Code Section 7050.5-7055 and Section 5097.98)*

Less than Significant Impact. As indicated previously, it is unlikely that Project implementation would affect any sites or properties that possess known cultural values because the Project site has been substantially altered. The site is not utilized by any Native Americans for religious or other culturally important rites and no important cultural resource sites have been identified within the City of Buena Park. Further, no formal cemeteries are located on the site or in the Project environs, and no human remains are known to exist in the Project area. Although Project implementation would require grading and excavation to implement the proposed improvements, the discovery of human remains is not anticipated.

Although no impacts to human remains are anticipated because of the proposed Project there is a low potential for encountering such resources in the Project site, in abundance of caution, the applicant will be required to comply with the applicable policies and implementation measures prescribed in that document, including the following SC 5.3:

Standard Conditions

SC 5.3 In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected, and the Project applicant shall immediately notify the Orange County Coroner of the find and comply with the provisions of the California Health and Safety Code Section 7050.5, including Public Resources Code Section 5097.98, if applicable. In the event that human remains are determined to be Native American human remains, the applicant shall consult with the Most Likely Descendent to determine the appropriate treatment for the Native American human remains.

Therefore, the Project would have a **less than significant** impact on human remains with implementation of SC 5.3.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
6. ENERGY 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?	☐	☐	☒	☐

6a. Response: (*Source: General Plan EIR, Conservation and Sustainability Element, Energy Analysis, prepared by Kimley-Horn on December 16, 2022, provided as Appendix D.)*

Less than Significant Impact.

Energy consumption associated with the proposed project is summarized in **Table 9, Project and Countywide Energy Consumption**. As shown in Table 9, the project's increase in electricity usage would constitute an approximate 0.0003 percent increase in typical annual electricity usage and an approximate 0.0002 percent increase in typical annual natural gas consumption in the County. Construction-related off-road automotive fuel consumption (i.e., fuel consumed during construction) would result in a 0.0064 percent increase in diesel and 0.0001 percent increase in gasoline consumption. During operations, on-road automotive fuel consumption (i.e., fuel consumed from operational vehicle trips to and from the project site) would result in a 0.0007 percent increase in diesel and 0.0005 percent increase in gasoline over Countywide automotive fuel consumption.

Table 9: Project and Countywide Energy Consumption

Energy Type	Project Annual Energy Consumption	Orange County Annual Energy Consumption[1,2]	Percentage Increase Countywide
Operational Electricity and Natural Gas[3]			
Electricity Consumption	49,122 kWh	18,931,838,620 kWh	0.0003%
Natural Gas Consumption	1,338 therms	580,187,556 therms	0.0002%
Automotive Fuel Consumption[4]			
Project Construction[5,6]			
Diesel	8,719 gallons	135,727,658 gallons	0.0064%
Gasoline	795 gallons	1,142,034,463 gallons	0.0001%
Project Operations			
Diesel	734 gallons	135,727,658 gallons	0.0005%
Gasoline	8,513 gallons	1,142,034,463 gallons	0.0007%

Notes:
1. The project increases in electricity and natural gas consumption are compared with the total consumption in Orange County in 2021.
2. The project increases in automotive fuel consumption are compared with the countywide fuel consumption (projected) in 2024.
3. Electricity and natural gas consumption would be nominal during project construction, and therefore is not quantified in this table.
4. Countywide fuel consumption is from the California Air Resources Board EMFAC2021 model.
5. Construction fuel consumption is based on equipment and load factors from California Emissions Estimator Model (CalEEMod version 2020.4.0).
6. The estimated construction fuel consumption is based on the project's construction equipment list timing/phasing, and hours of duration for construction equipment, as well as vendor, hauling, and construction worker trips.

Refer to Appendix A: Energy Data for the Energy Analysis provided as Appendix D. for assumptions used in this analysis.

Construction-Related Energy

During construction, the project would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during grading, paving, and building construction. Fuel energy consumed during construction would be temporary in nature and would not represent a significant demand on energy resources. Some incidental energy conservations would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest EPA and California Air Resources Board engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Substantial reductions in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest in minimizing the cost of doing business.

While construction activities would consume fuels, project-related consumption of such resources would be temporary and would cease upon the completion of construction. In addition, mobile equipment energy usage during construction would be minimized as the project would comply with CARB's idling regulations, which restrict idling diesel vehicles and equipment to five minutes. Additionally, consistent with state requirements, all construction equipment would meet CARB Tier 3 In-Use Off-Road Diesel Engine Standards. Engines are required to meet certain emission standards, and groups of standards are referred to as Tiers. A Tier 0 engine is unregulated with no emission controls, and each progression of standard level (i.e., Tier 1, Tier 2, Tier 3, etc.) generate lower emissions, use less energy, and are more advanced technologically than the previous tier. CARB's Tier 3 In-Use Off-Road Diesel Engine Standards requires that construction equipment fleets become cleaner and use less energy over time.

As indicated in Table 9, the overall diesel fuel consumption during construction of the project would be 8,719 gallons and gasoline consumption would be 795 gallons, which would result in a nominal increase (0.0064 percent and 0.0001 percent, respectively) in fuel use in the County. As such, project construction would have a minimal effect on the local and regional energy supplies. It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. Construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. Therefore, potential impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources from Project construction would be **less than significant** impact.

Operational Energy

Transportation Energy Demand

Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration (NTSA) is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with Federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. Table 9 provides an estimate of the daily fuel consumed by vehicles traveling to and from the project site. As indicated in Table 9, project operations are estimated to consume approximately 734 gallons of diesel fuel and 8,513 gallons of gasoline fuel per year, which would

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

increase Countywide automotive fuel consumption by 0.0005 percent and 0.0007 percent, respectively. The Project would not result in any unusual characteristics that would result in excessive long-term operational fuel consumption. Fuel consumption associated with vehicle trips generated by the Project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

Building Energy Demand

Operations of the proposed Project would require approximately 49,122 kWh of electricity per year and approximately 1,338 therms of natural gas per year; refer to Table 9. The proposed project would be required to comply with Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy usage. Furthermore, the electricity provider, SCE, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 50 percent of total procurement by 2030. Renewable energy is generally defined as energy that comes from resources which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat. The increase in reliance of such energy resources further ensures projects will not result in the waste of the finite energy resources.

As indicated in Table 9, operational energy consumption would represent an approximate 0.0003 percent increase in electricity and 0.0002 percent increase in natural gas consumption over the current Countywide usage. The project would adhere to all Federal, State, and local requirements for energy efficiency, including the Title 24 standards. As such, the Project would not result in the inefficient, wasteful, or unnecessary consumption of building energy.

Conclusion

As shown in Table 9, the increase in electricity and automotive fuel consumption over existing conditions is minimal (less than one percent). For the reasons described above, the project would not place a substantial demand on regional energy supply or require significant additional capacity, or significantly increase peak and base period electricity demand. Thus, the project would not cause a wasteful, inefficient, and unnecessary consumption of energy during project construction, operation, and/or maintenance, or preempt future energy development or future energy conservation. Therefore, potential impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources from the project would be **less than significant**, and no mitigation would be required.

b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

6b. Response: (*Source: City of Buena Park, Conservation and Sustainability Element, Energy Analysis, prepared by Kimley-Horn on December 16, 2022, provided as Appendix D)*

Less than Significant Impact. Title 24, Part 11, contains voluntary and mandatory energy measures that are applicable to the Project under the California Green Building Standards Code. As discussed above, the Project would result in an increased demand for petroleum during construction. In accordance with Title 24 Part 11 mandatory compliance, the Applicant would have (a) 50 percent of its construction and demolition waste diverted from landfills; (b) mandatory inspections of energy systems to ensure optimal working efficiency; (c) and low pollutant emitting exterior and interior finish materials, such as paints. Compliance with all of these mandatory measures would decrease the consumption of petroleum.

The Project would not conflict with any of the federal, state, or local plans for renewable energy and energy efficiency. Because the Project would comply with Parts 6 and 11 of Title 24 and with City of Buena Park General Plan policies, no conflict with existing energy standards and regulations would occur. Therefore, impacts associated with renewable energy or energy efficiency plans would be considered **less than significant**.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
7. GEOLOGY AND SOILS 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.	☐	☐	☒	☐

7(a)i. Response: ***(Source: 2035 General Plan Exhibit SAF-1 Regional Faults, Exhibit SAF-2 Liquefaction/Landslide Potential; General Plan EIR Section 5.7 Geology and Seismic Hazards; Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., dated September 19, 2019, provided as Appendix F; and USGS U.S. Quaternary Faults map: https://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=5a6038b3a1684561a9b0aadf88412fcf)***

Less than Significant Impact. The City of Buena Park is located within the seismically active Southern California region containing many earthquake faults. According to United State Geological Survey (USGS) Quaternary Faults map, there are no Alquist-Priolo Earthquake Fault Zones or fault lines that traverse the City. The closest fault to the Project site is the Norwalk fault, located 0.35-miles north of the Project site. The Geotechnical and liquefaction report maintains that the Project site is a significant distance from any active faults. Furthermore, no ground rupture has been observed nor is anticipated on the Project site. Therefore, the possibility of significant fault rupture on the site is low. Lastly, any structures developed as a part of the Project will be subject to seismic design criteria in accordance with the latest California Building Code (CBC). As such, with compliance with the latest CBC, impacts would be **less than significant.**

ii. Strong seismic ground shaking?	☐	☐	☒	☐

7(a)ii. Response: (Source: ***2035 General Plan Exhibit SAF-1 Regional Faults, General Plan EIR Section 5.7 Geology and Seismic Hazards; and Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., on September 19, 2019, provided as Appendix F)***

Less than Significant Impact. According to the 2035 GP Exhibit SAF-1, Regional Faults Map, the Norwalk Fault is located 0.35-miles north of the Project site. The Geotechnical and Liquefaction report noted that the Project site is located at a significant distance from the nearest active fault, and no indication of ground rupture was observed at the Project site during the investigation. However, it should be recognized that much of southern California is subject to some level of damaging ground shaking because of movement along the major active (and potentially active) fault zones that characterize this region. As such, future development of the Project site would expose structures and residents to a potentially significant ground shaking effects associated with earthquakes occurring on one or more of the active regional faults.

The Project would be required to be in conformance with the most recently published CBC, City regulations, and other applicable standards. The CBC design standards correspond to the level of seismic risk in each location and are intended primarily to protect public safety and secondly to minimize property damage. Conformance with standard engineering practices and design criteria established in the latest CBC would reduce the effects of seismic ground shaking to a **less than significant** level.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
iii. Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐

7(a)iii. Response: (*Source: Exhibit SAF-2 Liquefaction/Landslide Potential; General Plan EIR Section 5.7 Geology and Seismic Hazards; and Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., on November 22, 2022, provided as Appendix F)*

Less than Significant Impact with Mitigation. Liquefaction is the loss of the strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include ground water table elevation, soil type and grain size characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d50) grain size in the range of 0.075 to 0.2 mm. Clayey (cohesive) soils or soils which possess clay particles (d<0.005mm) in excess of 20 percent are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

According to the 2035 GP Exhibit SAF-2, Liquefaction/Landslide Potential Map, and the Geotechnical Investigation, the Project site is located within a mapped zone for liquefaction potential. The subsurface conditions encountered at the boring and test pit locations consist of up to approximately two feet of fill underlain by younger alluvial deposits. Groundwater seepage was encountered in the boreholes at a depth of approximately 42 feet. The subsurface evaluation of liquefaction potential performed within the Project site revealed that the materials underlying the Project site possess factors of safety against liquefaction that are below the minimum CBC requirements and are prone to liquefaction. Although the Project site is prone to liquefaction conditions, the Geotechnical and Liquefaction report concluded that the Project site is suitable for the implementation of the proposed Project with implementation of the Mitigation Measures noted below. Additionally, the mitigations presented here are based on observations at the site during our geotechnical investigation, engineering judgment, cone penetration test (CPT) soundings and analysis of the soil samples obtained from the boreholes. Minor variations of subsurface conditions are common, and major variations are possible.

Mitigation Measures:

MM GEO-1 (General Grading): Grading areas must be stripped of all vegetation, debris, and other deleterious material. All loose soil disturbed by the removal of trees and/or structures (if applicable) must be removed and recompacted. The existing fill is up to approximately two (2) feet thick and is not suitable for foundation support. Where compacted earth materials are supporting the structural load, a minimum of three (3) feet below the bottom of the proposed mat foundation, and an area, comprised of a minimum of five (5) feet (or equal to the depth of removal, whichever is greater) beyond the footprint of the proposed structure, must be over-excavated. At locations where new fill is proposed, the existing fill must be entirely removed and replaced with a certified engineered fill. The proposed new fill must be placed in horizontal layers and must be benched into undisturbed competent younger alluvial deposits.

MM GEO-2 (Survey Before and During Construction – Blemish Survey): Prior to groundbreaking, the owner (the contractor) needs to perform a comprehensive survey of the neighboring properties, which shall include the services of a licensed surveyor and the observation of the existing buildings and other structures, records of all observed existing signs of lateral movement and settlement, supplemented with pictures and other documents. After completion of the installation, the shoring must be periodically monitored by a licensed surveyor for a lateral deflection of the vertical elements. The monitoring of the shoring must be performed not less than once every week. The first reading must be taken immediately after the completion of installation of the shoring, and consecutive readings must be taken on a weekly basis. The

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

maximum lateral deflection of the shoring system must be limited to one-half (½) of an inch. In the event that lateral movements of the shoring in excess of one-half (½) of an inch are encountered, the consulting geotechnical-engineer-of-record and structural-engineer-of-record must be notified immediately.

MM GEO-3 (Foundations): The proposed structures must be supported by a mat foundation. The proposed mat foundation must be founded into certified engineered fill. Where compacted earth materials are supporting the structural load, a minimum of three (3) feet below the bottom of the proposed mat foundation, and an area, comprised of a minimum of five (5) feet (or equal to the depth of removal, whichever is greater) beyond the footprint of the proposed structure, must be over-excavated. The fill, placed in over-excavated area, must be compacted. In addition, the bottom of the proposed mat foundation must be below a plane with a slope of one horizontal to one vertical (1:1) projected upward from the bottom edge of adjacent existing footings (if applicable).

An allowable bearing capacity of 1,000 psf must be used for soils beneath the proposed mat foundation, founded a minimum of twenty-four (24) inches into certified engineered fill. The maximum loading for the mat foundation in localized areas should not exceed 1,500 psf, and the maximum extent of the area allowed with the maximum localized loading should not exceed 15 feet by 15 feet.

The allowable bearing value is for dead-plus-live loads and may be increased by thirty (30) percent for momentary wind and seismic loads. The following minimums apply to all footings:

1. The proposed mat foundation must be founded a minimum of twenty- four (24) inches into certified engineered fill.
2. The final design of the proposed mat foundation must be provided by a structural engineer in conjunction with this office.
3. A coefficient of friction of 0.25 must be utilized for resisting lateral loads at the contact surface of concrete and foundation soils.
4. Passive earth pressure increasing at the maximum rate of 250 psf per foot of depth, to a maximum of 2,500 psf, may be used in calculations.
5. The design modulus of subgrade reaction (K_s) for the subject property is 150 kcf.
6. Frictional and passive resistance of the proposed mat foundation may be combined, provided the passive bearing resistance does not exceed two-thirds of the allowable passive bearing.
7. All concrete elements of the substructure, which are in contact with the soil, must be constructed from concrete based on Cement Type V for highly corrosive soils.
8. The damp-proofing for protection of the floors and wooden structures must be designed by a waterproofing specialist, due to the highest historic water level recorded near the ground surface of the Project site.

MM GEO-4 (Seismic Design Parameters): The proposed Project structural design must conform with the 2022 California Building Code, as shown below:

Latitude	33° 52’ 42” N
Longitude	117° 59’ 58” W
Site Classification	D
Site Coefficient, F_a	1.2

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Site Coefficient, F_v	1.7
Site Spectral Response Acceleration Parameters (g):	
Mapped Acceleration, Ss (0.2 sec.)	1.556
Mapped Acceleration, S_1 (1 sec.)	0.551
Adjusted Maximum Acceleration, SMS (0.2 sec.	1.867
Adjusted Maximum Acceleration, SM1 (1 sec.)	0.937
Design Acceleration, SDS (0.2 sec.)	1.245
Design Acceleration, SD1 (1 sec.)	0.624
Source: *SASSAN Geosciences, Inc.* November 22, 2022. *Geotechnical Report. Page, 16.*	

MM GEO-5 (Engineering Fill): All fill earth materials must consist of clean soil that is free of vegetation and other debris. The fill must be placed in six- (6-) to eight- (8-) inch thick lifts at near optimum moisture content and compacted. Particles larger than three (3) inches in diameter must not be allowed in the backfill material. Earth materials must not be imported to the site without prior approval by the soil engineer. All engineered fill must be compacted to a minimum of ninety (90) percent of its maximum dry density (ASTM 7-16). Where cohesionless soil having less than fifteen (15) percent finer than 0.005 millimeter is used for fill, it must be compacted to a minimum of ninety-five (95) percent of its maximum dry density. Neither jetting nor water tamping are permitted.

Heavy construction equipment must be maintained at a minimum distance of three (3) feet from the existing structures. Hand-operated compaction equipment must be used to compact the backfill soils within this 3-foot-wide zone.

MM GEO-6 (Driveway and External Slabs-On-Grade): The subgrade for the proposed driveway and external slabs-on-grade must consist of a minimum two (2) foot thick layer of certified compacted fill. The competent subgrade must be covered with four (4) inches of crushed miscellaneous aggregate (CMA) and compacted to ninety-five percent (95%) of its maximum dry density (ASTM 7-16). The CMA must be covered by asphalt concrete, concrete slab, stone pavers or equal.

MM GEO-7 (Pipe Bedding and Trenching Backfill): The pipe bedding must consist of sand or similar granular material having a minimum sand equivalent value of thirty (30). The sand must be placed in a zone that extends a minimum of six (6) inches below and twelve (12) inches above the pipe for the full trench width. The bedding material must be compacted. The trench backfill above the pipe bedding may consist of approved, on-site or imported soils, and it must be compacted. Where utility trenches are parallel to the footings, the bottom of the trench must be located above a plane with a slope of 1:1, projected downward from the adjacent bottom edge of the footing.

MM GEO-8 (Site Drainage): The drainage devices such as sloping sidewalks and area drains must be provided around the building to collect and direct all water away from the structure. Neither rain nor excess irrigation water should be allowed to collect or pond against foundations. The collected water must be directed to the proper drainage system via non-erosive devices. The actual site drainage, however, must be designed by the consulting civil engineer-of-record. Additionally, based on the site's liquefaction potential, additional moisture must not be injected into the grounds. As such, the use of permeable pavers or similar ground covers at the Project site is not recommended.

MM GEO-9 (Design Review): The geotechnical aspects of the Project should be reviewed during the design process by the geotechnical specialist preparer. The scope of the services may include assistance to the design team by providing specific recommendations for special cases,

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

reviewing the foundation design, reviewing the geotechnical portions of the Project for possible costs savings through alternative approaches, and evaluating the overall applicability of the recommendations provided herein from the preparation of the geotechnical report.

Additional site-specific explorations may also be considered if significant foundation modifications are required using the above recommendations.

The owner should anticipate that the consulting soils engineer must review and approve the detailed plans prior to issuance of any permits. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans include the recommendations contained in their reports.

MM GEO-10 (Inspections): All excavations must be inspected and approved by the geotechnical engineer. All fill placed for engineering purposes must be tested for compaction and moisture content and certified. Inspection of excavations may also be required by the appropriate reviewing governmental agencies.

It is recommended that SASSAN Geosciences, Inc., be retained to verify compliance with the recommendations made in the geotechnical report, to ensure compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event that exposed subsurface conditions differ from those anticipated in the geotechnical report.

Additionally, a joint meeting among the parties involved in this Project is recommended prior to the start of groundbreaking to discuss specific procedures and scheduling. Inspections performed by SASSAN Geosciences, Inc., are for verification purposes only and shall under no circumstance relieve other parties involved in the design and construction from their obligation to perform work in accordance with the approved plans.

With compliance to the latest applicable CBC and implementation of MM GEO-1 through GEO-10, a **less than significant impact** would occur.

iv. Landslides?	☐	☐	☐	☒

7(a)iv. Response: (*Source: 2035 General Plan Exhibit SAF-1 Regional Faults, Exhibit SAF-2 Liquefaction/Landslide Potential; General Plan EIR Section 5.7 Geology and Seismic Hazards; and Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., on September 19, 2019, provided as Appendix F)*

No Impact. According to the 2035 GP EIR, the City of Buena Park is characterized by flat topography, and the potential for landslides is low. Consistent with the 2035 GP EIR, the geotechnical and liquefaction report concluded that the Project site is located in a relatively level area. Seismically induced landslides are not of concern for the Project site. In addition, the site is located outside of the seismically induced landslide hazard zone. Therefore, the Project would have **no impact** related to landslides.

b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

7b. Response: *(2035 General Plan Exhibit SAF-1 Regional Faults, Exhibit SAF-2 Liquefaction/Landslide Potential; General Plan EIR Section 5.7 Geology and Seismic Hazards; and Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., dated September 19, 2019, provided as Appendix F; United States Department of Agriculture (USDA) Web Soil Survey:*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx; Title 13, 18, and 19 of the Buena Park Municipal Code and Zoning Ordinance)

Less than Significant Impact. According to the geotechnical and liquefaction report, on-site soils are 100% Chino silty clay loam, 0 to 2 percent slopes, somewhat poorly drained, and characterized by a low runoff class. A low runoff class is indicative of flatter topography or highly permeable soils. Additionally, a low runoff class indicates that soil erosion by surface runoff is unlikely to occur from construction and grading activities. Refer to **Exhibit 7**, *Conceptual Grading Plan*.

Although the Project site has been heavily disturbed in the past due to the previous four (4) single-family residential dwelling units, the Project would require additional disturbance for grading and compaction activities. However, Project construction would be required to comply with the City MC provisions (including Sections 18.04.020, 18.204.030 and 19.632.) requiring erosion control, as well National Pollutant Discharge Elimination System (NPDES), Regional Water Quality Control Board (RWQCB) Storm Water Pollution Prevention Plan (SWPPP) to ensure that soil erosion would be limited. Therefore, potential impacts regarding soil erosion or loss of topsoil would be **less than significant**.

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?	☐	☐	☒	☐

7c. Response: (*2035 General Plan Exhibit SAF-1 Regional Faults, Exhibit SAF-2 Liquefaction/Landslide Potential; General Plan EIR Section 5.7 Geology and Seismic Hazards, Section 5.8 Hydrology, Drainage, and Water Quality; and Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., on September 19, 2019, provided as Appendix F)*

Landslides

Refer to Response 7(a)iii above.

Lateral Spreading

The General Plan EIR notes that due to the high susceptibility of liquefaction in the City, the potential similarly exists for lateral spreading. Lateral spreading is horizontal/lateral ground movement of relatively flat-lying soil deposits towards a free face such as an excavation, channel, or open body of water; typically, lateral spreading is associated with liquefaction of one or more subsurface layers near the bottom of the exposed slope.

According to the General Plan Update EIR[4], because the City is prone to lateral spreading, numerous controls would be imposed on future development through the City's permitting process that would lessen potential impacts associated with seismic-related ground failure involving liquefaction and lateral spreading, differential settlement, and earthquake-induced slope failure. Additionally, due to the City's potential for later spreading, a Geological and/or Soils Report shall be required for each tentative map (pending the City's concurrence for each project), as determined by the City Engineer, stating the effect of geological or soil conditions on the proposed development; refer to Municipal Code Section 18.32.080.A.9.

Additionally, a preliminary Soils Report may be required for every subdivision, as determined by the City Engineer; refer to Municipal Code Chapter 18.72, *Soils Reports*. Development would be evaluated by the City Engineer on a site-by-site basis, in order to determine potential for seismic-related ground failure and soil problems. Additionally, the design, construction, and engineering of structures within the City would be subject to compliance with the CBC pursuant to Municipal Code Title 15. The potential effects of seismic-related

[4]General Plan. 2010. Section 5.7, *Geology and Seismic Hazards*, page 24.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

ground failure involving liquefaction and lateral spreading, differential settlement, and earthquake-induced slope failure, would be sufficiently mitigated for structures designed and constructed in conformance with corrective actions recommended in the Geological and/or Soils Report, and the latest CBC and industry-accepted engineering standards. Moreover, the City has identified protective measures within the Policies and Implementation Measures incorporated into the proposed General Plan Update, which are intended to decrease the potential risk of seismic and geologic hazards. Less than significant impacts involving the exposure of people and structures to potential substantial adverse effects involving seismic-related ground failure (i.e., liquefaction and lateral spreading, differential settlement, and earthquake-induced slope failure) would occur with implementation of the proposed General Plan Update, following compliance with the latest CBC, Municipal Code, and proposed General Plan Update Policies and Implementation Measures.

Subsidence

According to the 2035 GP, the City of Buena Park does not contain significant mineral aggregate resources that would result in the large-scale extraction of groundwater, gas, oil, or geothermal energy that would cause subsidence within the City. Therefore, the Project would not be subject to impacts regarding land subsidence.

Liquefaction

Refer to Response 7(a)iii above.

As previously noted, compliance with the latest CBC, Municipal Code, and proposed General Plan Update Policies and MM GEO-1 through GEO-9 would be **less than significant**.

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?	☐	☒	☐	☐

7d. Response: ***(Source: Exhibit SAF-3 Differential Settlement and Expansion Potential; General Plan Update EIR Section 5.7 Geology and Seismic Hazards; and Geotechnical and Liquefaction Report, prepared by SASSAN Geosciences, Inc., on September 19, 2019, provided as Appendix F; USGS Web Soil Survey: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx; and California Building Code as adopted by the City of Buena Park and set out in Title 15 of the Buena Park Municipal Code)***

Less than Significant Impact with Mitigation. Expansive soils are soils with a significant amount of clay particles that can give up water (shrink) or take on water (swell). Fine-grained soils, such as silts and clays, may contain variable amounts of expansive clay minerals. When these soils swell, the change in volume exerts significant pressures on loads that are placed on them. As part of the proposed Project's geotechnical and liquefaction report, two borings were drilled to a depth of 50 feet. Refer to **Exhibit 8**, ***Conceptual Grading Plan.*** The earth materials encountered in the boreholes and test pits consist of up to approximately two feet of fill underlain by younger alluvial deposits, which extend to the depths explored.

According to the 2035 GP Exhibit SAF-3, Differential Settlement and Expansion Potential Map, the Project site is not within an area designated as having a moderately expansive soil potential. However, the geotechnical and liquefaction report provided design recommendations that consider highly expansive earth materials which concluded that the implementation of the proposed Project is feasible with implementation of the Mitigation Measure noted below. The geotechnical and liquefaction report is provided as Appendix E to this Initial Study. Compliance with the design recommendation of the above noted Mitigation Measure, applicable provisions of the City's Building and Construction Safety Code Title 15, and the latest CBC regarding soil hazards, impacts related to the expansive soils will be **less than significant impact** with implementation of MM GEO-6.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

7e. Response:

No Impact. An existing 8" sewer main line runs along Craig Avenue in an east-west direction, The Project site is currently served by four 4" sewer laterals.[5] The proposed Project will be served by one (1) 4" sanitary sewer pipe for 120 Drainage Fixture Unit (DFU) from each building thus making a total of two (2) 4" sewer pipes from both the buildings with a total discharge of 240 Drainage Fixture Unit. The two (2) 4" sewer pipes get connected into a 6" sanitary sewer then to the City's 6" sewer main line. No septic tanks or alternative wastewater disposal systems would be required. Therefore, the Project would have **no impact.**

f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐

7f. Response: (*Source: 2035 General Plan Update EIR Section 5.10 Cultural Resources; Cultural Resources Assessment, prepared by BCR Consulting LLC, on October 19, 2022, provided as Appendix C)*

Less than Significant Impact. As indicated previously, it is unlikely that Project implementation would affect any sites or properties that possess known cultural values because the Project site has been substantially previously altered from its previous use. The site is not known to have been utilized by any Native Americans for religious or other culturally important rites and no important cultural resource sites have been identified within the City of Buena Park. Further, no formal cemeteries are located on the site or in the Project vicinity and no human remains are known to exist in the Project area. Although Project implementation would require grading and excavation to implement the proposed improvements, the discovery of human remains is not anticipated. Similarly, the Western Science Center (WSC) determined that there are no known localities within the Project area or within a one-mile radius of the site. Although no impacts to paleontological resources are anticipated. In abundance of caution, because grading activities always has a potential for encountering inadvertent resources in the Project site, the applicant will be required to comply with the following SCSC 7.1 and 7.2:

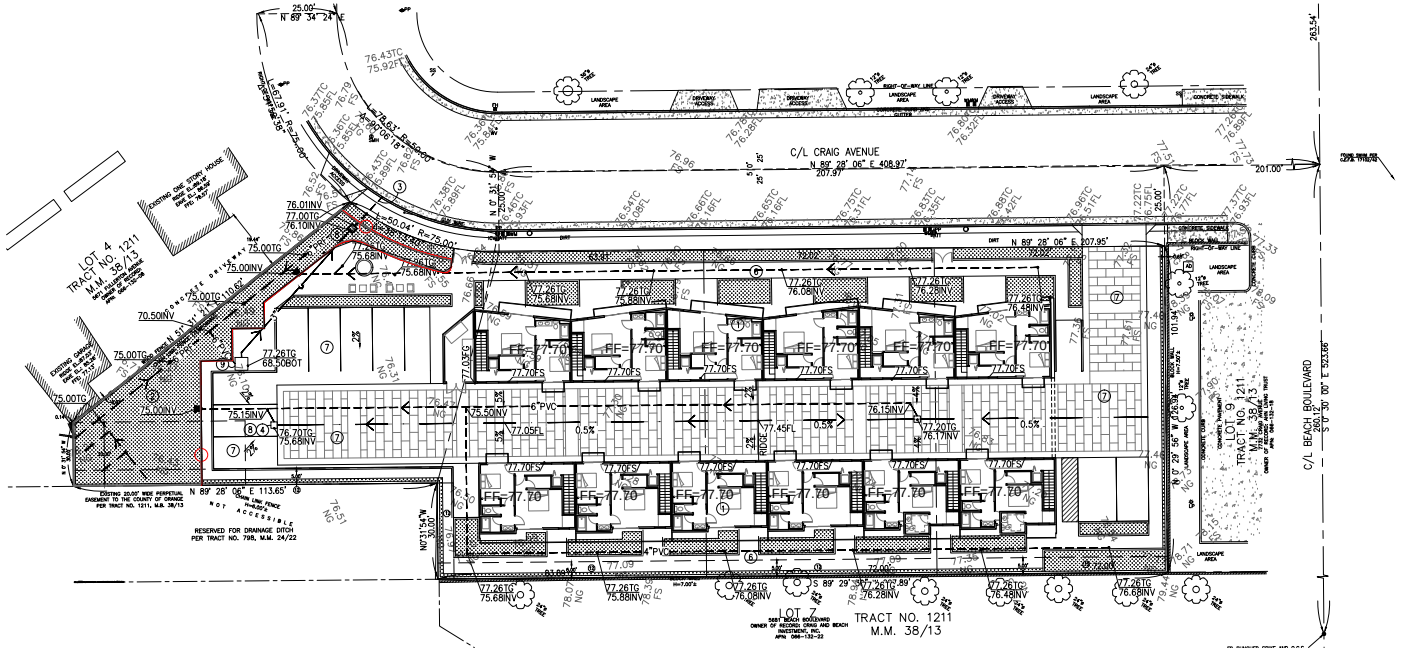
Standard Conditions

SC 7.1 Paleontological resources found prior to or during construction shall be evaluated by a qualified paleontologist, and appropriate mitigation measures applied, pursuant to Section 21083.2 of CEQA, before the resumption of development activities. Any measures applied shall include the preparation of a report meeting accepted industry standards.

SC 7.2 Any project that involves earth-disturbing activities in soil or rock units known or reasonably suspected to be fossil-bearing shall require monitoring by a qualified paleontologist retained by the project applicant for the duration of excavation or trenching.

Implementation of the SC identified above, which reflect adopted SCs, would ensure that impacts remain **less than significant**.

[5] City of Buena Park. 2023. *Sewer Services Mapping App*. https://www.buenapark.com/city_departments/public_works/engineering_services/sewer_plans.php. (Accessed March 2023)



CONSTRUCTION NOTES
(1) DRAIN ROOF RUNOFF TO BIO-RETENTION WITH UNDERDRAIN
(2) CONSTRUCT BIO-RETENTION WITH UNDERDRAIN
(3) CORE 4"PVC TO CURB FACE
(4) PAINT STENCIL "NO DUMPING THIS DRAINS TO OCEAN" PER DETAIL HEREON
(5) CONSTRUCT LANDSCAPE PLANTER PER LANDSCAPE PLAN
(6) CONSTRUCT 4"THICK CONC. WALK 2%MAX CROSS SLOPE
(7) CONSTRUCT PERMEABLE PAVER FOR INCIDENTAL ONLY
(8) CONSTRUCT 24"X 24" CATCH BASIN
(9) CONSTRUCT 48"X 48" SUMP PUMP

EARTHWORK QUANTITIES

CUT: 420 CY
FILL: 253 CY

NOT INCLUDE OVEREXCAVATION

THE ABOVE QUANTITIES DO NOT REFLECT ANY SHRINKAGE, SWELLING, SUBSIDENCE, OR ANY SPECIAL CONDITIONS THAT MAY BE SPECIFIED IN THE PRELIMINARY SOILS REPORT AND ARE FOR REFERENCE AND FEE PURPOSES ONLY. SINCE THE ENGINEER CANNOT CONTROL THE EXACT METHOD FOR MEANS USED BY THE CONTRACTOR DURING GRADING OPERATIONS, NOR CAN THE ENGINEER GUARANTEE THE EXACT SOIL CONDITION OVER THE ENTIRE SITE, THE ENGINEER ASSUMES NO RESPONSIBILITY FOR FINAL EARTHWORK QUANTITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING HIS OWN EARTHWORK QUANTITIES FOR BIDDING, CONTRACT AND CONSTRUCTION PURPOSES. IF IT APPEARS THERE WILL BE AN EXCESS OF SHORTAGE OF MATERIAL, THE CONTRACTOR MAY NOTIFY THE ENGINEER TO DETERMINE IF POSSIBLE GRADE ADJUSTMENTS CAN BE MADE TO ALLEVIATE SAID MATERIAL EXCESS OR SHORTAGE. THE CONTRACTOR SHALL ALSO BE RESPONSIBLE FOR THE REMOVAL OF ALL FOOTING, TRENCH AND SUBGRADE PREPARATION SPOILS.

EASEMENT

(12) AN EASEMENT FOR THE PURPOSE SHOWN BELOW AND RIGHTS INCIDENTAL THERETO AS SET FORTH IN A DOCUMENT. (PLOTTED HEREON)

PURPOSE: PUBLIC UTILITIES
RECORDING DATE: NOVEMBER 18, 1947
RECORDED: IN BOOK 1600, PAGE 88, OF OFFICIAL RECORDS
AFFECTS: AS DESCRIBED THEREIN

Source: Pacific Geotech, Inc., 11/08/2022.

EXHIBIT 8: Conceptual Grading Plan
Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
8. GREENHOUSE GAS EMISSIONS Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

8a. Response: (*Source: Air Quality and Greenhouse Gas Analysis prepared by Kimley-Horn and Associates on December 12, 2022, provided as Appendix A1)*

Less than Significant Impact

SCAQMD Thresholds

The City of Buena Park has not established screening threshold for greenhouse gas (GHG) emissions. Therefore, the SCAQMD's proposed screening threshold of 3,000 metric tons of CO_2 equivalent per year ($MTCO_2e$/year) has been considered and used in this analysis.

Project GHG Emissions

The Project would include direct and indirect GHG emissions from Project construction and operations. Construction is considered a direct source since these emissions occur at the site. Direct operational-related GHG emissions for the proposed Project would include emissions from area and mobile sources, while indirect emissions are from energy consumption, water demand, and solid waste.

Construction GHG Emissions

Construction of the Project would result in direct emissions of CO_2, nitrous oxide (N_2O), and methane (CH_4) from construction equipment and the transport of materials and construction workers to and from the Project site. Construction GHG emissions are typically summed and amortized over the lifetime of the Project (assumed to be 30 years), then added to the operational emissions.[6] Total GHG emissions generated during all phases of construction were combined and are presented in **Table 10, Construction Greenhouse Gas Emissions**. The CalEEMod outputs are contained within Appendix A of the Air Quality and Greenhouse Gas Analysis. As shown in Table 10, the Project construction would result in 75 $MTCO_2e$ (approximately 2.5 $MTCO_2e$/year when amortized over 30 years).

Table 10: Construction Greenhouse Gas Emissions

Construction	$MTCO_2e$ per Year
Total Construction	75
Amortized over 30 Years	2.5
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model data outputs.	

Operational GHG Emissions

Operational or long-term emissions occur over the life of the proposed Project. GHG emissions would result from direct emissions such as Project generated vehicular traffic, on-site combustion of natural gas, operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the Project, the energy required to convey water to, 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. **Table 11, Total Project Greenhouse Gas Emissions** summarizes the total GHG emissions associated with proposed Project.

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

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Table 11: Total Project Greenhouse Gas Emissions

Emissions Source	$MTCO_2e$ per Year
Construction Amortized over 30 Years	2.5
Area Source	3
Energy	16
Mobile	63
Waste	3
Water	3
Total Project Emissions	**90.5**
SCAQMD Project Threshold	3,000
Threshold Exceeded?	**No**
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model data outputs.	

As shown in Table 10, the Project would generate approximately 90.5 $MTCO_2e$/year. The Project would not result in an increase in GHG emissions that exceed the SCAQMD's screening threshold of 3,000 $MTCO_2e$/year. Therefore, Project-related GHG emissions would be **less than significant**.

b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

8b. Response: (*Source: Air Quality and Greenhouse Gas Analysis prepared by Kimley-Horn and Associates, on December 12, 2022, provided as Appendix A)*

Less than Significant Impact.

GHG Plan Consistency

CARB's *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), adopted December 15, 2022, sets a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 in accordance with AB 1279. The Project would benefit from the State targets set forth within the 2022 Scoping Plan. As the proposed Project's GHG emissions would be well below the SCAQMD 3,000 $MTCO_2e$/year threshold, the Project would not interfere with the State's goals for reducing GHG emissions.

Approximately 87 percent of the Project's emissions are from energy and mobile sources which would be further reduced by implementation of current State programs. It should be noted that the Project and the City have no control over vehicle emissions (approximately 70 percent of the Project's total emissions). However, these emissions would decline in the future due to Statewide measures including the reduction in the carbon content of fuels, CARB's advanced clean car program, CARB's mobile source strategy, fuel efficiency standards, cleaner technology, and fleet turnover. Additionally, SCAG's 2020-2045 RTP/SCS (Connect SoCal) is also expected to help California reach its GHG reduction goals, with reductions in per capita transportation emissions of 19 percent by 2035.[7] Accordingly, the Project does not interfere with the State's efforts to reduce GHG emissions in 2030.

[7] Southern California Association of Governments. 2018. *SB 375 Regional Plan Climate Targets*. Available at https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets. Accessed December 2022.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Project operations would benefit from the implementation of current and potential future energy regulations including the SB 100 renewable electricity portfolio target of 60 percent renewable energy by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

Further, the proposed Project is required to comply with all building codes in effect at the time of construction which include energy conservation measures mandated by Title 24 of the California Building Standards Code – Energy Efficiency Standards. Title 24 is part of the State's plans and regulations for reducing emissions of GHGs to meet and exceed AB 32 and SB 32 energy reduction goals. Because Title 24 standards require energy conservation features in new construction, they help reduce GHG emissions. Building Energy Efficiency Standards are updated on an approximately three-year cycle and the most recent 2022 standards took effect January 1, 2023. The Project would be required to comply with the latest applicable version of the code depending on when permit applications are applied for (i.e., permit applications on or after January 1, 2023, must comply with the 2022 Energy Code).

As discussed above, the proposed Project would comply with the applicable State, regional, and local goals, and policies regarding reducing GHG emissions. Therefore, the Project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions, and a **less than significant** impact would occur.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HAZARDS & HAZARDOUS MATERIALS Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐

9a. Response: *(Source: Google Earth Historic Imagery; State Water Board GeoTracker: https://geotracker.waterboards.ca.gov/; DTSC EnviroStor Database Listed Sites: https://www.envirostor.dtsc.ca.gov/public/)*

Less than Significant Impact.

The Project site is known to have been previously developed with four (4) single-family dwelling units. The homes have been demolished, and the Project site is currently vacant.

Short-Term Construction Impacts

Hazardous or toxic materials transported in association with construction may include items such as asphalt, oils, paints, and fuels. All hazardous materials are required to be utilized and transported in accordance with their labeling pursuant to federal and State law. Routine construction practices include good housekeeping measures to prevent/contain/clean-up spills and contamination from fuels, solvents, concrete wastes, and other waste materials. With implementation of Best Management Practices (BMPs) and compliance with all applicable federal, State, and local regulations including all Certified Unified Program Agency (CUPA) regulations, there would be a **less than significant impact** relating to the routine transport, use, or disposal of hazardous materials during construction.

Long-Term Operational Impacts

The Project includes the development of the 2 townhouse-style apartment buildings, each containing 6 apartments each, an associated parking lot, and landscaping. Project operations could result in the use, storage, and disposal of hazardous household materials. These can include, but are not limited to paint solvents, pesticides and fertilizers, and maintenance supplies and equipment (e.g., drain cleaners, floor stripping products, paints, oils, fuels). The California Department of Toxic Substances Control (DTSC) does not identify the Project site as a hazardous site. The nearest recorded hazardous occurrence is at Nutrilite Products Inc., located at 5600 Beach Boulevard, approximately 500-feet northeast of the Project site. This site was under investigation for potential gasoline contaminants and has been designated as "Completed" since June 1987. With oversight by the appropriate federal, State, and local agencies, and compliance by the new development with applicable regulations related to the handling, storage and disposal of hazardous materials will cause the Project to have a **less than significant impact** directly, indirectly, and cumulatively.

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?	☐	☐	☒	☐

9b. Response:

Less than Significant Impact. As identified in Response 9(a), above, the Project site was formerly fully developed with four (4) single-family dwelling units. No hazardous conditions existed on the site, and none have been identified now. The proposed Project is anticipated to require typical handling, storing, or dispensing activities associated with hazardous or potentially materials used to conduct household cleaning or maintenance activities. These typical over the counter materials are regulated and comply with all applicable federal, state, and local agencies. Additionally, any handling of hazardous materials will be limited in both quantities and concentrations. There is no reasonably foreseeable upset involving the use of arsenic,

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

asbestos, or lead based paint. As discussed in Response 9(d), below, the Project site is not listed on hazardous materials site lists compiled pursuant to Government Code Section 65962.5 and the site is vacant. Therefore, because the Project site has been previously graded and no demolition activities would occur, there is limited foreseeable upset regarding subsurface hazards being unearthed during excavation associated with Project construction or for hazardous materials to be released from existing materials. The potential for Project implementation to result in a significant hazard to the public or the environment would be **less than significant**.

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

9c. Response: (Source: Google maps; *DTSC EnviroStor Database Listed Sites:* *https://www.envirostor.dtsc.ca.gov/public/*)

Less than Significant Impact. The closest school to the Project site is Jesus' Hands Montessori Preschool, located at 5621 Beach Boulevard approximately 50 feet northeast of the Project site. Considering that the existing use of the site which has not historically handled hazardous materials, that the site is not in a hazardous list site, and that the Project is not a use typically associated with the emission or the handling of any hazardous materials, substances, or waste, aside from those identified in Response 9(a), above. As noted below in Response 9(d), because the proposed Project is not a use that will handle hazardous materials, it is anticipated that the Project will have a **less than significant impact** regarding emitting hazardous emissions or handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school directly, indirectly, or cumulatively.

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?	☐	☐	☐	☒

9d. Response: (*Source: DTSC EnviroStor Database Listed Sites:* *https://www.envirostor.dtsc.ca.gov/public/*)

No Impact. A review of hazardous materials site lists compiled pursuant to Government Code Section 65962.5 found that the Project site is not included on any such lists. Therefore, the Project would have **no impact** to the public or environment directly, indirectly, or cumulatively.

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?	☐	☐	☒	☐

9e. Response: *(Source: 2035 General Plan Noise Element; General Plan Environmental Impact Report Section 5.9 Hazards and Hazardous Materials, Exhibit 5.9-4 AELUP Height Obstruction – Imaginary Surfaces for Fullerton Municipal Airport; Airport Environs Land Use Plan for Fullerton Municipal Airport, Airport Impact Zones and Noise Contours: https://files.ocair.com/media/2021-02/AELUP%20for%20FMA%2005092019.pdf)*

Less than Significant Impact. The closest public airports to the Project site are the Fullerton Municipal Airport, located approximately 0.92-mile northeast of the Project site. The Project site is located within the Airport Environs Land Use Plan (AELUP) for Fullerton Municipal Airport. However, according to the AELUP for Fullerton Municipal Airport, the Project site is outside of the 60 Community Noise Equivalent Level (CNEL) noise contour

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

for the Fullerton Municipal Airport Impact Zones and Noise Contour. According to the 2035 General Plan Noise Element, no special noise reduction requirements apply to the Project site, being outside of the 60 CNEL noise contour for the Fullerton Municipal Airport. This designation indicates low noise impacts and a low risk level. Thus, impacts associated with this airport would be unlikely. Based on 2035 General Plan EIR Exhibit 5.9-4, Airport Environs Land Use Plan (AELUP) Height Obstruction Map, the Project is located within the 250-foot zone for Fullerton Municipal Airport Obstruction Imaginary Surfaces. The proposed Project height of 30' feet would be consistent with the City's allowed maximum building height under the proposed High Density Residential (HDR) land use and Medium-Density Multifamily Residential (RM-20) zoning and therefore would not introduce height obstructions nor violate any height restrictions that would create a safety hazard.

Because the Project is not located within a significant noise contour that would cause adverse noise impacts on the proposed residences, noise is not anticipated to impact the Project site. The Project would not create a safety hazard to the people residing or working in the Project area, and a **less than significant impact** would occur.

f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☒	☐	☐

9f. Response: (*Source: 2035 General Plan Safety Element; General Plan EIR Section 5.9 Hazards and Hazardous Materials)*

Less than Significant Impact with Mitigation. The Project will be served by existing, fully improved streets, primarily Craig Avenue and Beach Boulevard, as well as a network of other local streets. Based on the 2035 General Plan Safety Element, the Orange County Fire Authority (OCFA) participates in disaster planning as it relates to emergency operations, which includes high occupant areas and school sites and may participate in community disaster drills planned by others. Individual Project review by the City and the OCFA would also be required.

Additionally, the City of Buena Park Emergency Operations Plan (EOP), adopted November 2007, stipulates that, in the event of an emergency, all major roads would serve as evacuation routes. This includes Beach Boulevard, which is accessible from the Project site via Craig Avenue or, alternatively, via Fullerton Avenue and Pacific Avenue. Except for the new curb and gutter proposed along south side of Craig Avenue, the Project proposes no other alterations to these routes.

As it is not unusual with new developments/redevelopment construction activities, the Project could temporarily impact street traffic along Craig Avenue during the construction phase due to construction activities encroaching into the right-of-way (ROW) from the construction activities related to the new curb and gutter. The City requires preparation and implementation of a Traffic Management Plan (TMP) for all projects that require construction in the public ROW. As such, the Project would require the implementation of Mitigation Measure HAZ-MAT-1, which would require that a TMP be prepared. The TMP must be reviewed and approved by the City's Traffic Engineer prior to the start of construction activity in the public ROW. The typical TMP requires such things as the installation of K-Rail between the construction area and open traffic lanes, the use of flagmen and directional signage to direct traffic where only one travel lane is available or when equipment movement creates temporary hazards, and the installation of steel plates to cover trenches under construction. Emergency access must be maintained. Compliance with City requirements for traffic management during construction in the public ROW would ensure that the project would have a less than significant impact in this regard.

During construction of the proposed curb, the Project would ensure that the minimum right-of-way widths on City streets is maintained with the preparation and implementation of a Traffic Management Plan (TMP) which is required for all projects that require construction in the public ROW. The typical TMP requires such things as the installation of K-Rail between the construction area and open traffic lanes, the use of flagmen and

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

directional signage to direct traffic where only one travel lane is available or when equipment movement creates temporary hazards, and the installation of steel plates to cover trenches under construction, when applicable. Emergency access must be maintained. Compliance with City requirements for traffic management during construction in the public ROW would ensure the Project has a less than significant impact in this regard.

Additionally, the Project would not interfere with the City's EOP because it does not contain any features that would prohibit the execution of such plans. The Project would maintain access via Craig Avenue and would contain adequate access and circulation for emergency equipment on-site. Evaluation and approval of the proposed site plan by the OCFA would be required to ensure adequacy of emergency access.

Mitigation Measures:

MM HAZ-MAT-1: The Traffic Management Plan (TPM) must be reviewed and approved by the City's Traffic Engineer prior to the start of construction activity in the public ROW. Depending on the Project activities to take place during construction within the public ROW, the TMP could requires the installation of K-Rail between the construction area and open traffic lanes, the use of flagmen and directional signage to direct traffic where only one travel lane is available or when equipment movement creates temporary hazards, and the installation of steel plates to cover trenches under construction, if necessary. Emergency access must be maintained. Compliance with City requirements for traffic management during construction in the public ROW.

With implementation of Mitigation Measure HAZ-MAT-1, impacts to an emergency response plan would be **less than significant**.

g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

9g Response: (*Source: CALFIRE Fire Hazard Severity Zone Viewer: https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=4466cf1d2b9947bea1d4269997e86553*)

No Impact. The proposed Project is in an urbanized area where no wildlands exist within or near the Project site. According to CALFIRE, the Project site is not located within a Very High Fire Hazard Severity Zone (VHFHSZ) or adjacent to wildland areas or a VHFHSZ; therefore, **no impact** regarding wildland fires either directly, indirectly, or cumulatively from this Project will occur.

10. HYDROLOGY AND WATER QUALITY

Would the project:

a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐

10a.Response: (*Source: WQMP prepared by Pacific Geotech, Inc. dated May 2, 2022, and revised on August 21, 2023, provided as Appendix G)*

Less than Significant Impact. The City of Buena Park is within the Santa Ana Regional Water Quality Control Board (RWQCB) and is subject to the County of Orange Drainage Area Management Plan (DAMP). The DAMP describes requirements for the preparation and implementation of Water Quality Management Plans (WQMPs) within the RWQCB. Pursuant to the DAMP, a Preliminary WQMP was prepared for the proposed Project. Mandatory compliance with the WQMP would ensure that the proposed Project does not violate any water quality standards or waste discharge requirements during long-term operation. As described in the WQMP, appropriate structural and non-structural BMPs will also be required to be implemented. Some of the BMPs

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

the Project shall be required to implement include the following biotreatment, non-structural, and structural BMPs:

Non-Structural Source Control BMPs

- Education for Property Owners, Tenants and Occupants
- Activity Restrictions
- Common Area Landscape Management
- BMP maintenance
- Title 22 California Code of Regulations (CCR) Compliance
- Uniform Fire Code Implementation
- Common Area Litter Control
- Employee Training
- Common Area Catch Basin inspection
- Street Sweeping Private Streets and Parking Lots

Structural Source Control BMPs

- Provide storm drain system stenciling and signage
- Design and construct outdoor material storage areas to reduce pollution introduction
- Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control
- Incorporate requirements applicable to individual priority projects categories (from SDRWQCB NPDES Permit)

Prior to issuance of grading or building permits, compliance with SC 10.1 would be required:

Standard Conditions

SC 10.1 Prior to issuance of grading or building permits, permit applicant shall submit for approval by the City engineer, a WQMP specifically identifying BMPs that will be used on site to control predictable pollutant runoff. Applicant shall record the approved WQMP with the Orange County.

Therefore, with implementation of SC 10.1, potential impacts that could substantially degrade surface or ground water quality would be **less than significant.**

b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐

10b.Response: ***(Source: City of Buena Park 2020 Urban Water Management Plan: https://www.buenapark.com/city_departments/public_works/utilities/water/urban_water_management_plan.php; WQMP prepared by Pacific Geotech, Inc. on May 2, 2022, and revised on August 21, 2023, provided as Appendix G)***

Less than Significant Impact. The City of Buena Park meets its water needs through a combination of local groundwater (80%) from the Orange County Groundwater Basin, managed by the Orange County Water District (OCWD), and supplemental imported water (20%) from the Metropolitan Water District (MWD). Based on the City's Urban Water Management Plan (UWMP), the City will continue utilizing groundwater sources for most of its domestic water supply and anticipates a shift to 90% groundwater and 10% imported water.

Groundwater Supplies

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The UWMP contains existing and projected water supplies and demands for the City of Buena Park during normal and dry-year scenarios. **Table 12, Projected Multiple-Dry Year Supplies and Demands (afy),** provides projected multiple-dry year supplies, and demands, which represent water supplies and demands during extended periods of drought conditions when supplies would be reduced.

Table 12: Projected Multiple-Dry Year Supplies and Demands (afy)

Year	Totals	2025	2030	2035	2040	2045
First Year	Supply Totals	14,266	15,000	14,380	14,507	14,612
	Demand Totals	14,266	15,000	14,380	14,507	14,612
	Difference	0	0	0	0	0
Second Year	Supply Totals	14,489	14,838	14,406	14,529	14,628
	Demand Totals	14,489	14,838	14,406	14,529	14,628
	Difference	0	0	0	0	0
Third Year	Supply Totals	14,713	14,677	14,433	14,551	14,656
	Demand Totals	14,713	14,677	14,433	14,551	14,656
	Difference	0	0	0	0	0
Fourth Year	Supply Totals	14,937	14,515	14,459	14,573	14,662
	Demand Totals	14,937	14,515	14,459	14,573	14,662
	Difference	0	0	0	0	0
Fifth Year	Supply Totals	15,161	14,354	14,485	14,595	14,679
	Demand Totals	15,161	14,354	14,485	14,595	14,679
	Difference	0	0	0	0	0

Source: City of Buena Park. 2021. *2020 Urban Water Management Plan. Table 7-4. Retail: Multiple Dry Years Supply and Demand Comparison.* Available at https://cms7files1.revize.com/buenaparkca/BuenaPark2020UWMPFINALDRAF.pdf. Accessed November 1, 2022.

According to Table 12, the City anticipates having sufficient water source for multiple-dry years. Although the Project proposes residential uses at a higher density than what is currently permitted on the site, due to the scale of the Project, increase in water demand and population growth would be nominal. Therefore, as shown in Table 12, the Project's water usage would represent only a nominal percentage of projected surplus (projected supply minus project demand) for the multiple dry year scenarios (conservative). Therefore, impacts associated with groundwater supplies would be less than significant.

Groundwater Recharge

The Project site is currently vacant and highly disturbed. The Project site is flat and does not contain any discernable streams or rivers. Under current conditions, 97 percent of the Project site is pervious. The proposed improvements will alter the existing drainage pattern of the site, and Project implementation would reduce pervious surface area of the Project site to approximately 51 percent, similar to conditions of the site when the formerly four (4) single-family dwelling units existed on the site.

As described in the WQMP, the Project proposes groundwater-related BMPs, including 7 bio-retentions with underdrain, one of which would be a 2,731-sf bio-retention area with underdrain located along the western portion of the Project site. Parking lot runoff would sheet flow within the parking lot into the proposed bio-retention with underdrain in the western portion of the Project site. After the BMP treatment, runoff will be conveyed to a sump pump and ultimately will be pumped to the Craig Avenue. According to the Shallow Groundwater Area Map (Appendix K of the WQMP), the Project site is located within the outskirts of an area of groundwater recharge where the depth to groundwater is designated 5 to 10 feet. However, groundwater was encountered in the boreholes at 42 feet below surface level. Additionally, due to the scale of the Project site, increasing the area of impervious surfaces is not anticipated to have a substantial adverse impact on groundwater recharge as the Project site was previously fully developed with four (4) single-family residential dwelling units. Additionally, runoff from the site would sheet flow in the parking lot which would be constructed of pervious concrete into proposed catch basin with filter insert and pipe to bio-retention with underdrain. After the water treatment, runoff will be conveyed to a sump pump and will be pumped to Craig Avenue at 347

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

gallons per minute (GPM) (0.774 cubic feet per second (cfs)) per detention basin calculations.[8] Because the Project site is in a liquefaction area, infiltration is not allowed, for this reason runoff from the site would be conveyed to a sump pump as noted above.

Additionally, the Project site will implement BMPs to reduce the accumulation of litter and debris, to minimize the use of pesticides, and to collect and dispose of any wash-water to the sanitary sewer. In addition, BMPs would ensure that federal and State water quality standards will not be violated. Because the Project would not substantially impact groundwater recharge and because the City has plenty of water resources and the Project is not anticipated to limit recharge, the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Implementation of BMPs would ensure that impacts would be **less than significant**.

c. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐

i. Result in substantial erosion or siltation on-or-off-site?

10(c)i Response: (*Source: Conceptual grading plan, Exhibit 9: WQMP)*

Less than Significant Impact. The Project site is currently vacant and is described in the Geotechnical Report as being relatively level. The Project site does not contain any discernable streams, rivers, or other drainage features. The Project site borders the Brea Creek Channel, to the south, a concrete lined channel managed by the Orange County Flood Control District (OCFCD). The proposed improvements will not significantly alter the drainage pattern of the existing site as 7 bio-retention basins with underdrains will be constructed to continue to capture water; refer to **Exhibit 9**, *WQMP.*

As noted above in Response 10(b), The Project excess runoff will drain to the Brea Creek Channel. Additionally, as the Project would incorporate a catch basin with filter insert and pipe to bio-retention with underdrain located along the western side of the site. After the water treatment, runoff will be conveyed to a sump pump and will be pumped to Craig Avenue in compliance with the Project WQMP. Consequently, impacts regarding erosion or siltation on-or-off-site would be **less than significant**.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on-or-off-site?	☐	☐	☒	☐

10(c)ii. Response: (*Source: Conceptual grading plan; FEMA Flood Map Service Center, FIRM Map 06059C0038J [effective on 12/03/2009]: https://msc.fema.gov/portal/home; WQMP, prepared by Pacific Geotech, Inc. on May 2, 2022, and revised on August 21, 2023, provided as Appendix G)*

Less than Significant Impact. According to the above referenced Federal Emergency Management Agency (FEMA) Flood Map, the Project site is designated as Zone AO River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet.

The Project proposes approximately 6,049 SF of concrete walkway, 2,606 SF of landscape, 10,275 SF of pavement driveway and parking area, 8,453 SF of roof area, and 2,731 SF of bio-retention area with underdrain. As the Project site is currently vacant, the Project would increase the surface area of impervious surfaces from 3% to 82% impervious surfaces.

[8] Pacific Geotech, Inc. May 2, 2022. *Preliminary Water Quality Management Plan, page 100.*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

There would be a total 7 bio-retentions with underdrain. The proposed north building roof runoff will be treated in 3 bio-retentions with underdrain located north of the north building. Treated runoff will be piped to Craig Ave. South building roof runoff will be treated in 3 bio-retentions with underdrain located south of the south building. Treated runoff will be piped to a sump pump located in the northwest parking area. Runoff in the parking lot and concrete walk will sheet flow into bio-retention with underdrain located on the western side of the property. After the BMP treatment, runoff will be conveyed to a sump pump and will be pumped to the Craig Ave at 347GPM (0.774 cfs).

Consequently, implementation of the proposed Project is not expected to increase surface runoff in a manner that would cause flooding. Additionally, the proposed bio-retention basins with underdrain will retain and infiltrate on-site water limiting run-off. Therefore, the proposed Project would not cause flooding, and would have a **less than significant impact**.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐

10(c)iii. Response: (Source: *Preliminary grading plan)*

Less than Significant Impact. As noted in Threshold 10(c)(ii) above, the Project would fully offset storm water runoff such that runoff water will not exceed that of existing conditions and is not otherwise anticipated to exceed the capacity of downstream drainage facilities through the implementation of BMPs. As discussed in Threshold 10(a) and 10(c)(ii) above, the proposed onsite retention basins and structural and non-structural BMPs will limit impacts to **less than significant** for stormwater runoff.

iv. Impede or redirect flood flows?	☐	☐	☐	☒

10(C)iv. Response: (*Source: Conceptual grading plan; FEMA Flood Map Service Center, FIRM Map 06059C0038J [effective on 12/03/2009]: https://msc.fema.gov/portal/home; WQMP, prepared by Pacific Geotech, Inc. on May 2, 2022, and revised on August 21, 2023, provided as Appendix G)*

No Impact. Although the Project site will increase in impervious surface compared to existing conditions, surface runoff would be captured onsite and would be directed to the proposed storm drains. Further, the increases in impervious surfaces will not occur in a FEMA-designated 100-year flood zone as a result of Project implementation. Therefore, **no impacts** are anticipated.

v. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒

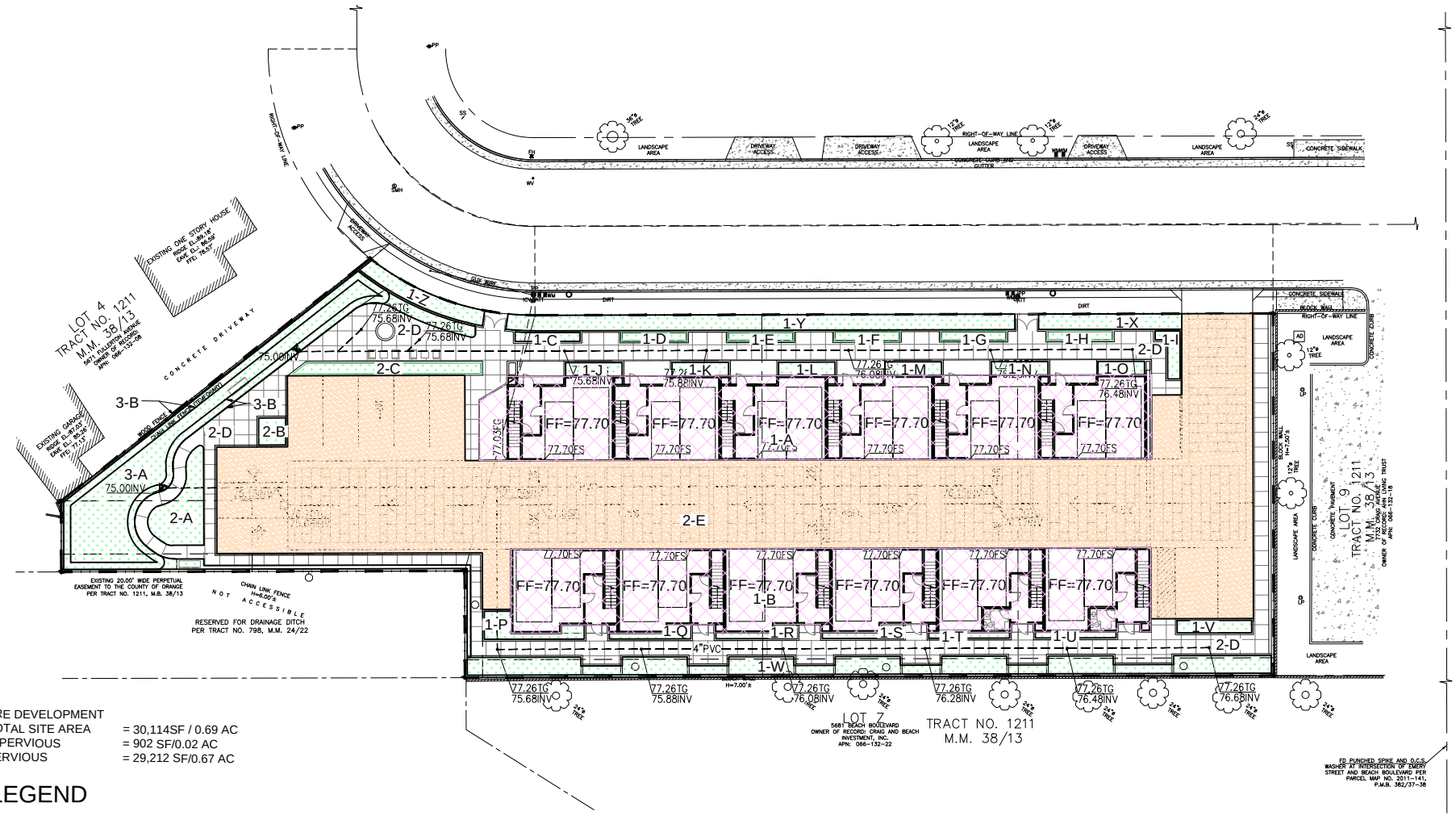
10(c)v. Response: (*Source: 2035 General Plan Safety Element; General Plan EIR Section 5.8 Hydrology, Drainage, and Water Quality)*

No Impact. A tsunami is a tidal wave or sea wave caused by seismic activity. The City of Buena Park is located inland approximately 26 miles from the Pacific Ocean and is not subject to tsunamis. A seiche involves the oscillation of a body of water in an enclosed basin, such as a reservoir, storage tank, or lake. The General Plan Safety Element does not identify potential significant impacts from seiche within the City. Mudflows are caused by flooding of slopes or unstable soils. There is no surface water within one-mile of the Project site and the Project site is characterized by being relatively flat, similar to its surroundings, removing the potential risk from mudflow. According to the preliminary WQMP, the Project site is not prone to seiche as the Project site is situated at a significant distance from the nearest enclosed body of water. Consequently, the Project would not result in impacts relative to inundation by seiche, tsunami or mudflow.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

10e.Response: (*Source: 2035 General Plan Safety Element; General Plan EIR Section 5.8 Hydrology, Drainage, and Water Quality)*

Less than Significant Impact. Pursuant to the federal Water Pollution Control Act (also known as the Clean Water Act [CWA]) and the National Pollution Discharge Elimination System (NPDES), new developments in the City are required to include the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) for the construction phase of a project, and a Water Quality Management Plan (WQMP) for the operation phase of a project. The City of Buena Park is in the jurisdictional area of the Santa Ana Regional Water Quality Control Board (RWQCB). WQMP requirements within the RWQCB were further clarified by the County of Orange Drainage Area Management Plan (DAMP) which requires the preparation and implementation of WQMPs for development projects. Consistent with the DAMP, the Applicant has submitted for City review and approval a Project specific WQMP for the proposed Project. Also refer to Response 10(b) above. The Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. A **less than significant impact** would occur.



Source: Pacific Geotech, Inc., 5/02/2022

EXHIBIT 9: Water Quality Management Plan

Craig Apartments Project, City of Buena Park

Not to scale

Kimley»Horn

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
11. LAND USE AND PLANNING Would the project:				
a. Physically divide an established community?	☐	☐	☒	☐

11a.Response: (*Source: 2035 General Plan Land Use and Community Design Element, Exhibit LU-1 General Plan Land Use Map)*

Less than Significant Impact. Typical projects considered to divide an established community are projects such as the development of new freeways/highways. The proposed Project would be residential in nature and consistent with the adjacent residential uses. Development of the Project site with residential buildings would be compatible with the established land use patterns in the area and would not physically divide an established community. Additionally, the Project would provide enhance circulation and connectivity consistent with the 2035 General Plan with the implementation of new curb and gutter which would benefit pedestrians moving past the Project site. Therefore, the Project would not divide an established community and a **less than significant** impact would occur.

b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐

11b. Response: (*Source: Source: 2035 General Plan Land Use and Community Design Element, Exhibit LU-1 General Plan Land Use Map; Title 19 of the City of Buena Park Municipal Code)*

Less than Significant Impact. The City of Buena Park 2035 General Plan Land Use and Community Design Element map has designated the Project site as Low Density Residential, and the Project site is zoned RS-6 One-Family Residential. Project implementation would require a General Plan Amendment to change the land use to High-Density Residential and a zone change (ZC) from RS-6 One-Family Residential to RM-20 Medium-Density Multifamily Residential. Within the RM-20 zone, housing density (measured in DU per net acre) would be permitted up to 20 dwelling units per acre. The Project and the proposed GPA and ZC would be consistent with the 2035 GP goal to create a balance of land uses, and would be consistent in particular with the following Policies: LU-1.3 to "establish a wide range of residential density and non-residential intensities to encourage a wide range of development opportunities", LU 3.1 to "ensure that development activities acknowledge the protection and enhancement of quality of life in the City's neighborhoods" which is done so by the Project being designed to be compatible with the character of the residential development located adjacent to the site on the west and north. No significant noise, air quality and/or water quality impacts would occur because of Project implementation. Policy 3.3 to "Ensure land use decisions consider impacts to infrastructure and service needs", which has been considered the environmental analysis conducted for the proposed Project which confirmed that the existing infrastructure, including circulation, sewer, water and other public facilities have adequate capacity to accommodate the addition of the proposed 12 multi-family residential dwelling units.

The predominant land use surrounding the Project site is residential, and the Project site, even with approval of the GPA and ZC, would maintain a residential use upon Project buildout, thus ensuring consistency with the surrounding community. With approval of the GPA and ZC, the Project would not conflict with the adopted General Plan and zoning district. Based on the above discussion, the Project impacts on a land use plan or policy would be **less than significant.**

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
12. MINERAL RESOURCES Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒

12a. Response: (*Source: 2035 General Plan Conservation and Sustainability Element. Page 5-8)*

No Impact. According to the 2035 General Plan Conservation and Sustainability Element, the California Division of Mines and Geology does not identify any significant mineral aggregate resource areas within City boundaries. Therefore, Project implementation would not result in the loss of availability of a known mineral resource. **No impact** would occur.

b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

12b. Response: (*Source: 2035 General Plan Conservation and Sustainability Element. Page 5-8)*

No Impact. Refer to Threshold 12(a) above. The Project site does not serve as an active mining site, nor does the Project vicinity. The 2035 General Plan does not identify mineral resources within City boundaries. **No impact** would occur.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
13. NOISE 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 the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐

13a. Response: (*Source: Noise Analysis prepared by Kimley-Horn and Associates on December 22, 2022, Appendix F.)*

Less Than Significant Impact.

Construction Noise

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 sensitive receptors near the construction site. Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Such activities may require graders, dozers, and tractors during site preparation and grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, and paving equipment during paving; and air compressors during architectural coating. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four 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. Typical noise levels associated with individual construction equipment are listed in **Table 13, Typical Construction Noise Levels**.

Table 13: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

Roller	85
Saw	76
Shovel	82
Truck	84

Source: Federal Transit Administration. September 2018. *Transit Noise and Vibration Impact Assessment Manual*. Available at https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. Accessed December 2022.

Following the methodology for quantitative construction noise assessments in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (September 2018) (FTA Noise and Vibration Manual), the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to predict construction noise at the nearest receptors to the Project site's boundary (i.e., single-family residences located approximately 19 feet to the northwest, single-family residences located approximately 66 feet to the north, and multi-family residences located approximately 180 feet to the southwest of the Project site). **Table 14, Project Construction Noise Levels,** shows the estimated exterior construction noise levels at the nearest sensitive receptors.

Following FTA methodology, when calculating construction noise, all equipment is assumed to operate at the center of the Project site while equipment would operate throughout the Project site and not at a fixed location for extended periods of time. Therefore, the distances used in the Roadway Construction Noise Model (RCNM) were 117 feet for single-family residences to the north, 175 feet for the single-family residences located to the northwest, and 270 feet for multi-family residences to the southwest. As shown in Table 14, the highest anticipated construction noise level of 79.9 dBA (during the building construction phase) would not exceed the FTA noise threshold of 80 dBA for residential uses. In addition, compliance with BPMC Chapter 19.344.010 would further minimize impacts from construction noise, as construction would be limited to the hours of 7:00 a.m. to 8:00 p.m. In addition, Section 8.28.040 of the City of Buena Park 2035 General Plan Noise Ordinance regulates construction noise. The Noise Ordinance also prohibits noise generated by construction activities between the hours of 8:00 PM and 7:00 AM Monday through Saturday, and at any time on Sundays. The Noise Ordinance does not include specific noise level limits for construction activities. The Project would be complied with the Noise Ordinance and BPMC Chapter 19.334.010 as to not disturb or generate noise outside of the permitted hours. Therefore, because Project construction noise levels would not exceed FTA noise standards and construction activities would be required to comply with MC provisions, noise impacts would be less than significant. Although construction noise levels may exceed the existing ambient noise levels in the Project area, construction would be temporary and would not result in a permanent increase in ambient noise levels.

Table 14: Project Construction Noise Levels

Construction Phase	Receptor Location			Worst Case Modeled Exterior Noise Level (dBA L_{eq})	Noise Threshold (dBA L_{eq})[2]	Exceeded?
	Land Use	Direction	Distance (feet)[1]			
Site Preparation	Single-family Residences	North	117	76.2	80	No
	Single-family Residences	Northwest	175	72.7	80	No
	Multi-family Residences	Southwest	270	68.9	80	No
Grading	Single-family Residences	North	117	77.2	80	No
	Single-family Residences	Northwest	175	73.7	80	No

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

	Multi-family Residences	Southwest	270	69.9	80	No
Building Construction	Single-family Residences	North	117	79.9	80	No
	Single-family Residences	Northwest	175	76.4	80	No
	Multi-family Residences	Southwest	270	72.6	80	No
Paving	Single-family Residences	North	117	76.2	80	No
	Single-family Residences	Northwest	175	72.7	80	No
	Multi-family Residences	Southwest	270	68.9	80	No
Architectural Coating	Single-family Residences	North	117	66.3	80	No
	Single-family Residences	Northwest	175	62.8	80	No
	Multi-family Residences	Southwest	270	59.0	80	No

Notes:
1. Per the methodology described in the FTA Noise and Vibration Manual (September 2018), distances are measured from the nearest receptors to the center of the project construction site.
2. The City does not have a quantitative noise threshold for construction. Therefore, the construction noise thresholds from the FTA Noise and Vibration Manual (September 2018) are conservatively used for this analysis.

Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to Appendix F.

Operational Noise

The Project site is currently vacant. Implementation of the proposed Project would create new sources of noise in the Project vicinity. The primary noise sources associated with the Project that could potentially impact nearby sensitive uses include mechanical equipment (e.g., air conditioners, etc.), typical stationary noise from residential uses (e.g., dogs barking, use of landscape equipment, people talking, etc.), and off-site traffic noise.

Mechanical Equipment

Mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[9] Sound levels decrease by 6 dBA for each doubling of distance from the source.[10] The nearest sensitive receptors (single-family residences to the northwest) would be located as close as 85 feet from the HVAC equipment at the Project site. At this distance, mechanical equipment noise levels would be approximately 47.4 dBA and would not exceed the City's 50 dBA exterior noise nighttime standard set forth in the Noise Element of the City's General Plan for residential uses. Therefore, impacts from mechanical equipment would be less than significant.

Residential Stationary Noise

The Project would also result in stationary noise that is typical of residential uses/neighborhoods, including the use of landscaping equipment, dogs barking, music playing, people talking, etc. These noise sources can

[9] Berger, E. H., Neitzell, R., & Kladden, C. A. June 26, 2015. *Noise Navigator Sound Level Database with Over 1700 Measurement Values*. Available at https://multimedia.3m.com/mws/media/8885530/noise-navigator-sound-level-hearing-protection-database.pdf. Accessed December 2022.

[10] Cyril M. Harris. 1994. *Noise Control in Buildings*. Available at https://asa.scitation.org/doi/pdf/10.1121/1.411328. Accessed December 2022.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

generate noise levels up to 65 dBA at a distance of 50 feet.[11] However, noise events from these stationary sources are generally sporadic, short in duration, and would not last for extended periods of time. In addition, stationary noise is generated by residences to the north, northwest, and southwest, and by the existing commercial uses to the east under existing conditions. Therefore, Project stationary noise levels would not result in a noticeable increase in ambient noise and would comply with the noise standards set forth in Noise Element of City's General Plan. Impacts would be **less than significant**.

Mobile Traffic Noise

Project implementation would result in an increase of traffic trips to Project area roadways. According to the *Trip Generation Memorandum for the Proposed Craig Apartments Project in the City of Buena Park* (Kimley-Horn & Associates Inc., November 2022, Appendix H), the Project would generate 57 daily trips, with 5 AM Peak Hour trips and 8 PM Peak Hour trips. 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 barely perceptible 3-dBA increase.[12] According to Daily Traffic Flow by Orange County Transportation Authority (OCTA)[13], Beach Boulevard has approximately 65,000 ADT. The proposed Project would result in approximately 57 daily trips, which is not enough to double the existing traffic volumes on Beach Boulevard (the primary access roadway to the Project site). Additionally, mobile traffic noise would be maintained to a minimum due to the proposed driveway being located on the east portion of the Project site which would wrap between the two proposed building which would further buffer mobile source noise produced by the vehicles. Moreover, the Project proposes perimeter block walls and landscaping with mature trees along the western property line. Both of these features would also attenuate noise generated from within the Project site from vehicles. Therefore, the proposed Project would not generate enough traffic to result in a noticeable 3-dBA increase in ambient noise levels. Impacts would be **less than significant**.

b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

13b. Response: ***(Source: 2035 General Plan EIR Table 5.11-G – Vibration Source Levels For Construction Equipment; Federal Transit Administration - Transit Noise and Vibration Impact Assessment Manual: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf)***

Less than Significant Impact. Increases in groundborne vibration levels attributable to the proposed Project would be primarily associated with short-term construction-related activities. Construction on the Project site would have the potential to result in varying degrees of temporary groundborne vibration, depending on the specific construction equipment used and the operations involved.

This analysis discusses the level of human annoyance using vibration levels in VdB and will assess the potential for building damages using vibration levels in peak particle velocity (PPV) (in/sec). This is because vibration levels calculated in root mean square (RMS) velocity[14] are best for characterizing human response to building vibration, while vibration level in PPV is best for characterizing potential for 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

[11] Berger, E. H., Neitzell, R., & Kladden, C. A. June 26, 2015. Noise Navigator Sound Level Database with Over 1700 Measurement Values. Available at https://multimedia.3m.com/mws/media/8885530/noise-navigator-sound-level-hearing-protection-database.pdf. Accessed December 2022.

[12] 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.

[13] According to the Orange County Transportation Authority, *Traffic Flow Map*, 2021.

[14] The RMS velocity is defined as the average of the squared amplitude of the signal.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

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 0.20 in/sec is considered safe and would not result in any construction vibration damage. This analysis uses the FTA architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 in/sec PPV and human annoyance criterion 80 VdB in accordance with Caltrans and FTA guidance[15] to evaluate potential construction vibration impacts. **Table 15, Typical Construction Equipment Vibration Levels,** lists reference vibration levels at 25 feet for Project construction equipment. The nearest off-site building/structure is a parking garage located adjacent to the west boundary of the Project site. Ground-borne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in Table 15, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during Project construction range from 0.003 to 0.076 in/sec PPV at 25 feet from the source of activity.

Table 15: Typical Construction Equipment Vibration Levels

Equipment	Reference Vibration Level (VdB) at 25 Feet	Reference Vibration Level (in/sec PPV) at 25 Feet	Distance (ft)[1]	Maximum Vibration Level (VdB)	Maximum Vibration Level (in/sec PPV)
Loaded Trucks	86	0.076	110	78	0.031
Jackhammer	79	0.035	45	71	0.014
Small Bulldozer/Tractors	58	0.003	20	61	0.004

Notes: VdB = vibration velocity; in/sec = inches per second; PPV = peak particle velocity
1. Distances reflect the nearest structure to the closest potential area of operation for each piece of construction equipment. All other structures would experience lower vibration levels.

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

As shown in Table 15, vibration-generating construction equipment would operate at a distance ranging from 20 to 110 feet from the nearest structure (parking garage structure adjacent to the western Project site boundary). At this distance, construction equipment vibration velocities would range from 61 to 78 VdB or 0.004 to 0.031 in/sec PPV. Therefore, ground-borne vibration generated from construction equipment would not exceed the 80 VdB human annoyance or 0.2 in/sec PPV building damage thresholds. Additionally, once operational, the Project would not be a source of ground-borne vibration. Therefore, vibration impacts associated with the proposed Project would be **less than significant**.

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?	☐	☐	☐	☒

[15] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, September 2013; Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

13c. Response: (*2035 General Plan Noise Element; Airport Environs Land Use Plan for Fullerton Municipal Airport, Airport Impact Zones and Noise Contours: https://files.ocair.com/media/2021-02/AELUP%20for%20FMA%2005092019.pdf*)

No Impact. Refer to Response 9(e). The airport is within two miles from the Project site. However, according to the AELUP for Fullerton Municipal Airport, the Project site is outside of the 60 Community noise Equivalent Level (CNEL) noise contour for the Fullerton Municipal Airport Impact Zones and Noise Contour. According to the 2035 General Plan Noise Element, no special noise reduction requirements apply to the Project site, being outside of the 60 CNEL noise contour for the Fullerton Municipal Airport. This designation indicates low noise impacts, and a low risk level. Thus, impacts associated with this airport would be anticipated to occur.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
14. POPULATION AND HOUSING 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)?	☐	☐	☒	☐

14a.Response: ***(Source: 2035 General Plan EIR Section 5.2 Population, Housing, and Employment, Table LU-4 General Plan Update Growth Assumptions; State of California Department of Finance Population Estimates for Cities, Counties, and the State – January 1, 2021 and 2022: https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2022/)***

Less than Significant Impact. The Project proposes the development of 12 dwelling unit townhouse-style apartments on currently four (4) vacant single-family residential lots. The four (4) vacant lots will be consolidated through a Lot Merger as a Conditional of Approval (COA) to the Project. The Project would require a GPA to amend the General Plan land use designation from Low-Density Residential (LDR) to High Density Residential (HDR) and a zone change from One-Family Residential (RS-6) to RM-20 Medium-Density Multifamily Residential. A temporary labor force would be required to construct the proposed Project. The short-term nature of this temporary construction workforce would not induce substantial population growth.

According to the California Department of Finance (CDF) population estimates, the total population of Buena Park was 83,968 in January 2021 and 83,430, in January 2022. This depicts a 0.6 percent population reduction in 2022 [16]. The 2035 General Plan assumes the City's total population will increase by approximately 6.27 percent between 2009 and 2035, for a total population of 88,616 in 2035. Although the Project is proposing housing, the increase in population would be approximately 40 new residents from implementation of the Project, considering the City's average person per household is 3.27; this increase would be nominal, and the Project would not induce substantial unplanned population growth as proposed. As such, the Project would not result in new impacts beyond those previously evaluated in the 2035 GP EIR; therefore, the impacts would be **less than significant**.

b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

14b. Response:

No Impact. Although the Project involves the development of 12 dwelling units, the Project would develop currently vacant lots to be consolidated into one (1) lot and therefore, would not displace existing people or housing. Therefore, there would be **no impact** on existing housing.

[16] California Department of Finance. 2021. *Table 2: E-5 City/County Population and Housing Estimates, 1/1/2021.*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
15. PUBLIC SERVICES				
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, to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a. Fire protection?	☐	☐	☒	☐

15a. Response: (*Source: 2035 General Plan Community Facilities Element, Safety Element; General Plan EIR Section 5.13 Fire Protection, Table 5.13-1 OFCA Fire Station Locations)*

Less than Significant Impact. Refer to Response 9(g). The Project is a multi-family residential development that would construct 12 townhouse-style apartments within the currently vacant Project site. As discussed in Response 9(g), the Project is not located within a VHFHSZ nor is it located adjacent to wildland areas.

Buena Park is a member of the Orange County Fire Authority (OCFA) Joint Powers Authority, which provides fire protection and emergency services within the City. Services include structural fire protection, emergency medical and rescue services, hazardous inspections and response, fire prevention planning and inspection, and public education activities. The OCFA operates 77 fire stations throughout 23 cities in Orange County, including three stations located within the City of Buena Park. Primary fire facilities and services would be provided by Fire Station #62 located 7780 Artesia Boulevard, approximately 0.6-miles south (by car) of the Project site. According to the 2035 GP, at the time of its adoption, Fire Station #62 was equipped with 1 Paramedic Engine and 3 Personnel (including 2 Paramedics). Fire Station #62 is located within a 2.0-mile radius of the Project site, and 3-minute travel times from the Fire Station to the Project site are feasible via Beach Boulevard. OCFA's goal is to maintain a 7-minute and 20 seconds total response time for the first arriving units, 80 percent of the time for all core incidents. According to the 2035 GP EIR, the average on-site response to emergency calls was 4 minutes and 51 seconds, and 5 minutes for all calls. According to the 2035 GP EIR, implementation of a Secured Fire Protection Agreement by OCFA and the City of Buena Park would adequately fund increase fire service protection to serve a growing population and a growing demand for fire protection services.

Because of the vacant nature of the existing site, compared to the proposed Project, it is anticipated that the proposed Project could generate more calls or need for fire protection services than what is currently provided to the site. However, it should be noted that the proposed Project would not be located within a VHFHSZ. Additionally, the proposed Project will be constructed pursuant to the latest California Fire Code as adopted and amended by the City of Buena Park (MC Chapter 16). The Project would also be subject to applicable development impact fees that would fund fire services and facilities to meet future demand. In addition, with implementation of 2035 GP policies, latest California Building Code (CBC), and approval from OCFA, there will be **less than significant impacts** on fire protection.

b. Police protection?	☐	☐	☒	☐

15b. Response: (*Source: 2035 General Plan Community Facilities Element, Safety Element; General Plan EIR Section 5.14 Police Protection)*

Less than Significant Impact. The Project would construct 12 townhouse-style apartments within the currently vacant Project site. The Project would be served by the Buena Park Police Department (BPPD), which operates from 6640 Beach Boulevard. According to the 2035 GP EIR, the BPPD employs 233 staff members and projects to have 252 in the next 20 years. Due to the scale of the Project, it is not anticipated that the Project would create substantial, unplanned population growth. Adequate police facilities and services are provided by the BPPD Station, located 6640 Beach Boulevard approximately 1.1 miles (by car) south of the Project site. A 5 min travel time to the Project site is feasible via Beach Boulevard.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

The proposed Project is not expected to substantially increase the demand for police protection services as the proposed Project is not inducive to criminal activities. The Project would also be subject to applicable development impact fees that would fund police services and facilities to meet future demand. With the payment of the required development impact fees, there will be **less than significant impacts**.

c. Schools?	☐	☐	☒	☐

15c. Response: (*Source: 2035 General Plan EIR Section 5.15 School Facilities, Table 5.15-1 Public School Characteristics, Table 5.15-2 School Development Fees, Table 5.15-3 Estimated Student Generation)*

Less than Significant Impact. The Project site is in the Buena Park School District (BPSD), which has seven schools. Schools serving the Project site within a 2.0 radius are Carl E. Gilbert Elementary School, Whitaker Elementary School, Corey Elementary School, Mabel L. Pendleton Elementary School, Charles G. Emery Elementary School, Valencia Park Elementary School, Gordon H. Beatty Middle School, and Buena Park High School.

The Project is residential and therefore has the potential to induce growth in the student population of BPSD. Based on the 2035 GP EIR Table 5.15-2, School Development Impact Fees, the addition of 12 dwelling units would generate approximately 40 new residents which with an estimated 2 to 4 elementary school students, about 1 middle school student, and about 2 high school students. The estimated number of students was projected using the student generation factors provided in the City of Buena Park 2035 Draft EIR, Section 5.15, *Table 5.15-3, Estimated Student Generation,* which projected future students within the City from buildout of the 2035 General Plan,[17] The 2035 General Plan EIR projected that the total City students would grow between 547 to 900 combined elementary, middle, and high school students As noted in the General Plan EIR, the implementation of the General Plan Update anticipated the addition of approximately 1,517 dwelling units citywide and up to 900 students. The City is anticipated to continue to grow in population by approximately 6.25 percent by 2035. As previously noted, while the Project would result in the addition of 12 new dwelling units to the area, it would not create or induce unplanned student population growth as the City anticipates growth to continue in the City.

Additionally, as noted in the General Plan EIR, school districts assess Development Fees against residential and commercial/industrial development to mitigate impacts resulting from the increase in demand for school related services. Pursuant to SB 50, payment of fees to the applicable school district is considered full mitigation for project impacts.[18] As such, with payment of school development fees, a **less than significant impact** on the demand for school facilities would occur.

d. Parks?	☐	☐	☒	☐

15d. Response:

Less than Significant Impact. According to the 2035 General Plan Open Space and Recreation Element, the City of Buena Park Recreation, Parks and Community Services Department is responsible for maintaining the City's 96.1 acres of parkland. Recreational facilities within Buena Park include 11 parks, one Community Recreation Center and Senior Center, one Community Gymnasium, and a community garden. Based on the 2035 GP, the City's standard for parkland is 3.0 acres per 1,000 persons. At the time the 2035 GP was adopted, the City was deficient in parks by approximately 50acres, based on a population of 83,385, citing a lack of vacant land and opportunities to expand or develop new parks. As indicated in Response 14(a) above, development of the Project site with 12 dwelling units would result in approximately 40 new residents.

[17] Draft General Plan EIR. 2035. *Section 5.15, School Facilities.* (Elementary School Level: 0.153-0.325 x 12 Dwelling Units = 2-4) (Middle School Level: 0.026-0.063 x 12 Dwelling Units = 1) (High School Level: 0.182-0.205 x 12 Dwelling Units = 2)

[18] Draft General Plan EIR. 2035. *Section 5.15, School Facilities*, page 5.15-5.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

According to the General Plan EIR, the City is deficient by approximately 50 acres of parkland. Due to the shortage of vacant land and the cost to purchase land, opportunities to expand existing parks and/or develop new parks within the City are limited.

The Project is anticipated to provide approximately 3,634 SF of common usable landscaped private greenspace and approximately 7,400 SF of pedestrian walking path throughout the perimeter of the site with café-style bench style seating, brick paving, a water feature, and mature trees. In addition, consistent with Policy OSR – 1.6, which requires that Projects continue to ensure that adequate useable private open space is provided in residential developments, and that such areas are maintained as open space in perpetuity. In addition, although the Project would provide private open space, as it is with all Projects within the City, the Project would be required to pay the applicable park in-lieu fee pursuant to Section 18.64.070 of the Buena Park Municipal Code to offset the Project's demand for parks and recreational facilities. Payment of the park in-lieu fee would off-set the Project's incremental demand for park facilities. Therefore, there will a **less than significant impact** on the demand for additional park facilities or services.

e. Other public facilities?	☐	☐	☒	☐

15e. Response: (*Source: 2035 General Plan Community Facilities Element)*

Less than Significant Impact. The Project consists of the development of 12 apartment dwelling units that would have a nominal increase on the City's total population with approximately 40 new residents. The Buena Park Library District provides library services to the City of Buena Park. The Buena Park Library is located at 7150 La Palma Avenue, approximately 2.8 miles (by car) south of the Project site. Due to the scale of the Project, the Project is not anticipated to result in adverse impacts of existing library facilities and services due to an increase in demand for such services. Therefore, **less than significant impacts** on other public facilities would occur.

16. RECREATION

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

16a. Response: (*Source: 2035 General Plan Open Space and Recreation Element, Exhibit OSR-1 Parks and Recreation Facilities; Title 18 of the Buena Park Municipal Code and Zoning Ordinance, Section 18.64.070 – Park and recreational facilities dedications)*

Less than Significant Impact. Refer to Response 15(d) above, development of the Project site with 12 dwelling units would result in approximately 40 new residents. Although the Project would add to a demand in parks and recreation facilities, the 2035 GP anticipates population growth to increase by 2035 and assumes that facilities such as parks would be utilized. As noted above, the Project would comply with Policy OSR-1.6, and would also comply with Policy OSR 2.2 which requires the continued requirement on new developments for provide park-in-lieu fees or land or recreational opportunities for residents in accordance with the City's park standard, 3.0 acres of parkland per 1,000 residents. With the payment of the park-in-lieu fees, the Project would cause a **less than significant impact** on recreational facilities and parks.

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

16b. Response:

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
No Impact. The Project includes green space on the western most portion of the site to be used for passive activities in perpetuity for residents. These facilities would be limited to greenspace, benches, and landscaping that will serve the new residents. The Project does not require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. Therefore, **no impact** would occur.				

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

17. TRANSPORTATION

Project Trip Generation

Trip generation estimates for the Project are based on daily and peak hour trip generation rates obtained from the Institute of Transportation Engineers (ITE) Trip Generation Manual (11th Edition) and additional sources. The following ITE code was used:

- ITE Land Use 220: Multifamily Housing (Low Rise)

A low-rise multifamily housing includes apartments, townhomes, and condominiums within the same building with at least three other dwelling units and two or three levels.

Daily AM Peak Hour and PM Peak Hour trips were estimated for a proposed 19,939 net SF townhouse style apartment building. Trip rates and the estimated Project trip generation are shown on **Table 16, Summary of Project Trip Generation**. The Project is expected to generate 57 daily trips, 5 trips during the AM Peak (two inbound and three outbound) and 8 trips during the PM Peak (five inbound and three outbound).

Table 16: Summary of Project Trip Generation

Land use	ITE Code	Units	Daily Trips	Trip Generation Rates[1]					
				AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing	220	DU	4.72	0.11	0.27	0.38	0.37	0.24	0.61

Land use	Quantity	Units	Daily	Trip Generation Estimates[2]					
				AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Total Project Trips		12 DU	57	2	3	5	5	3	8

Source: Kimley-Horn.2022. Trip Generation and VMT Memo, Appendix H.

a. Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?	☐	☐	☐	☒

17a. Response: ***(Source: Trip Generation Memorandum prepared by Kimley-Horn and Associates on November 2022, 2035 General Plan Mobility Element and Safety Element)***

No Impact. The proposed Project was evaluated to determine if it would likely conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks) or generate pedestrian, bicycle, or transit travel demand that would not be accommodated by transit, bicycle, or pedestrian facilities and plans. According to the 2035 General Plan, Chapter 3 Mobility Element, the City does not have a formal Bicycle Master Plan, and City streets are generally not equipped with designated bicycle facilities. A portion of the Brea Creek Channel, east of Dale Street, approximately 0.7 miles east of the Project site, is identified as a bike path. Because there are no bike paths and bicycle lanes near the Project site, the Project would not conflict with a bicycle plan. Currently, the Project site does have fully built pedestrian facilities along its roadway frontages, but the Project would provide new pedestrian facilities along with Project frontage (curb and gutter). Moreover, according to the Trip Generation and VMT Memorandum (Appendix H), the Project is located within a high-quality transit area which means that the Project site has access to high-quality transit services, as shown in Figures 3 and 4 of the Trip Generation and VMT Memorandum. The Project would not alter or interfere with transit services. Therefore, **no impact** would occur regarding conflict with a program plan, ordinance, or policy addressing the circulation system.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐

17b. Response: ***(Source: Trip Generation Memorandum prepared by Kimley-Horn and Associates on November 2022)***

Less Than Significant Impact. This section presents the Vehicle Miles Travelled (VMT) assessment for the Project for compliance with SB 743 and current CEQA requirements.

SB 743 was approved by the California legislature in September 2013. SB 743 required changes to the California Environmental Quality Act (CEQA), specifically directing the Governor's Office of Planning and Research (OPR) to develop alternative metrics to the use of vehicular "Level of Service" (LOS) for evaluating transportation projects. OPR has updated guidelines for CEQA and written a technical advisory for evaluating transportation impacts in CEQA and set a deadline of July 2020. OPR has recommended that Vehicle Miles Traveled (VMT) replace also as the primary measure of transportation impacts. OPR Technical Advisory suggests that the City may screen out VMT impact using project size, maps, transit availability, and provision of affordable housing to quickly identify when a project should be expected to cause a less-than significant impact without conducting a detailed study. The City of Buena Park has published Transportation Impact Analysis Guidelines for Vehicle Miles Traveled (2020) and Level of Service Assessment as recommended guidelines for analyzing transportation impacts of proposed development projects.

Per the City of Buena Park, TIA Guidelines (2020), for purposes of SB 743 compliance, a VMT analysis should be conducted for land use projects as deemed necessary by the Traffic Division and would apply to projects that have the potential to increase the baseline VMT per service population (e.g., population plus employment) for the City of Buena Park. Normalizing VMT per service population provides a transportation efficiency metric that the analysis is based on. The NOCC+ tool can be utilized to identify if a project satisfies some components of project screening below; including whether the parcel is in a transit priority area (TPA) or a low VMT generating area. The tool also identifies the potential for project screening based on project type.

The analysis conducted was based on the City of Buena Park's Vehicle Miles Traveled (VMT) Screening criteria which considered the following steps:

1. Has a Floor Area Ratio (FAR) less than 0.75
2. Includes more parking for use by residents, customers, or employees of the project that required by the City.
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Southern California Association of Governments (SCAG)); or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

In summary, findings concluded that the Project's FAR is 0.78 which is higher than the 0.75 threshold and step 1 is met. The Project would meet the exact requirement to provide 24 garage parking spaces and 12 outdoor parking spaces, for a total of 36 parking spaces. The Project is consistent with applicable goals of the 2020-2045 RTP/SCS, as shown on Table 3 of the Trip Generation and VMT Memo (Appendix H). The Project would not replace affordable residential units with a smaller number of moderate- or high-income residential units. Therefore, the Project meets all steps of the VMT Screening Criteria and is presumed to have a **less than significant** VMT impact.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

17c. Response: ***(Source: 2035 General Plan EIR Exhibit 5.1-1 Existing General Plan Land Use Map)***

No Impact. Refer to Response 13(c). The Project site is not within the Airport Influence Area Boundary as shown in the GP Land Use Map. Therefore, the proposed Project, which will develop two three-story apartment buildings, would not create a change in air traffic patterns, and impacts related to safety risks related to a change in air traffic patterns are not anticipated to occur from implementation of the proposed Project. As such, **no impact** on air traffic patterns would occur from the increase in traffic levels.

d. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐

17d. Response: ***(Source: 2035 General Plan; Trip Generation Memorandum prepared by Kimley-Horn and Associates on November 2022, provided as Appendix H)***

Less than Significant Impact. No major roadway construction or intersection construction would occur as part of the Project. Therefore, there will not be a substantial increase to hazards such as sharp curves or dangerous intersections. As proposed, this Project will have a **less than significant** impact on increasing hazards through design or incompatible uses.

e. Result in inadequate emergency access?	☐	☐	☒	☐

17e. Response: (***Source: Title 16 and 18 of the Buena Park Municipal Code and Zoning Ordinance; Fire Code; Trip Generation Memorandum prepared by Kimley-Horn and Associates on November 2022, provided as Appendix H)***

Less than Significant Impact. Main Project site vehicular access would be provided via one 20-foot-wide paved driveway located on the northeast corner of the site on Craig Avenue. The driveway would be constructed in accordance with the City's MC Section 18.92.010, Access Requirements, which would be designed to properly provide emergency vehicle access and mobility through a 25-foot-wide internal driveway.

Emergency ingress and egress is available via the 20-foot-wide non-gated driveway entering the Project site and the 25-foot-wide driveway running east-west between the two residential buildings. Because the Project driveway would not be gated, emergency access to the site would not be interrupted. In addition to uninterrupted fire access to the site, the Project would provide 24 fire ladder pads that would help the fire department to safely set ladders in the event that access is required to the second or third floor; finally, the Project site would provide two 150-foot-long fire hose pulls to serve the site from the east and west.

The OCFA would review the proposed Project and would provide comments regarding fire and emergency access. The proposed Project would comply with the OCFA requirements. The impact on emergency access from Project implementation would be **less than significant**.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
18. TRIBAL CULTURAL RESOURCES [*SECTION PENDING TRIBAL CONSULTATION]* 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 b. 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.	☐	☒	☐	☐

18a and 18b. Response: (Source: AB 52 & SB 18 Consultation)

As of July 2015, California AB 52 was enacted and expands CEQA by defining a new resource category, "Tribal Cultural Resources." AB 52 requires Lead Agencies to evaluate a project's potential to impact tribal cultural resources. Such resources include "sites, features, cultural landscapes, sacred places, and objects with cultural value to a California Native American Tribe and is listed or eligible for listing in the California Register of Historical Resources (CRHR) or included in a local register of historical resources. AB 52 also gives Lead Agencies the discretion to determine, supported by substantial evidence, whether a resource qualifies as a "tribal cultural resource."

The Project also notified the same California Native American Tribes of the Project pursuant to Senate Bill (SB) 18 Which is applicable pursuant to the Project's requested General Plan Amendment (GPA) application. The SB 18 process requires that the City contact the tribes for the purpose of opening consultation between the City and the tribal governments regarding this proposed Project. Following legislation guidelines, the tribes have 90 days after receipt of the tribal consultation notice (dated December 12, 2022) pursuant to California Governmental Code Section 65352.3. Tribal Governments are also accorded the right to respond with a "no effect" statement.

As noted above, on December 12, 2022, the City provided written notices to interested California Native American tribes on the list provided by the Native American Heritage Commission (NAHC). Consistent with the NAHC list, California Native American Tribes were contacted pursuant to Assembly Bill (AB) 52 and Senate Bill (SB) 18. The following tribes were notified: Campo Band of Diegueno Mission Indians, Ewiiaapaaya Band of Kumeyaay Indians, Gabrieleno Band of Mission Indians – Kizh Nation, Gabrieleno Tongva Indians of California Tribal Council, Gabrieleno Tongva Nation, Gabrieleno Tongva San Gabriel Band of Mission Indians, Gabrieleno Tongva Tribe, Juaneno Band of Mission Indians Acjachemen Nation – Belardes, Juaneno Band of Mission Indians Acjachemen Nation, La Posta band of Diegueno Mission Indians, Manzanita Band of Kumeyaay Nation, Mesa Grande Band of Diegueno Mission Indians, Pala Band of Mission Indians, Santa Rosa Band of Cahuilla Indians, and Soboba Band of Luiseno Indians.

As of March 21, 2023, only one written response was received from the Gabrieleno Band of Mission Indians – Kizh Nation on January 4, 2023, which noted that the Project site is in their Ancestral Tribal Territory and therefore was seeking further consultation with the Lead Agency. Pursuant to the request for consultation, on

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

February 28, 2023, the Gabrieleno Band of Mission Indians – Kizh Nation and City consulted and agreed to implement the following Mitigation Measures TCR-1, TCR-2, and TCR-3, as requested by the consulting tribe.

Mitigation Measure:

MM TCR-1: Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities:

A. The Project applicant/lead agency shall retain a Native American Monitor from or approved by the Gabrieleño Band of Mission Indians – Kizh Nation. The monitor shall be retained prior to the commencement of any "ground-disturbing activity" for the subject project at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching.

B. A copy of the executed monitoring agreement shall be submitted to the lead agency prior to the earlier of the commencement of any ground-disturbing activity, or the issuance of any permit necessary to commence a ground-disturbing activity.

C. The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request to the Tribe.

D. On-site tribal monitoring shall conclude upon the latter of the following (1) written confirmation to the Kizh from a designated point of contact for the project applicant/lead agency that all ground-disturbing activities and phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact Kizh TCRs.

E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.

MM TCR-2: Unanticipated Discovery of Human Remains and Associated Funerary Objects:

A. Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute.

B. If Native American human remains and/or grave goods discovered or recognized on the project site, then all construction activities shall immediately cease. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed.

C. Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2).

D. Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f)).

E. Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes.

F. Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.

MM TCR-3: <u>Procedures for Burials and Funerary Remains:</u>

A. As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains.

B. If the discovery of human remains includes four or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created.

C. The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. Cremations will either be removed in bulk or by means as necessary to ensure complete recovery of all sacred materials.

D. In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed.

E. In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects.

F. Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered.

G. The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.

With implementation of MMs TCR-1, TCR-2, and TCR-3, a **less than significant impact** would occur on tribal cultural resources.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
19. UTILITIES AND SYSTEM SERVICES Would the project:				
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunication facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐

19a. Response: *(Source: 2035 General Plan EIR Section 5.12 Wastewater; City of Buena Park Urban Water Management Plan: https://www.buenapark.com/city_departments/public_works/utilities/water/urban_water_management_plan.php)*

Less than Significant Impact.

As discussed in Section 3.0, the Project would require connection to sewer, domestic water, fire water, irrigation and dry utilities connection to existing utility infrastructure on Craig Avenue, as the Project site is vacant.

Sanitary Sewer –The Project would connect to the existing eight-inch pipe sewer main line along Craig Avenue. As detailed in the city's General Plan EIR, the Buena Park Public Works Department provides sewer services within the city through a network of local sewer mains. The city's local sewer system connects to regional trunk sewer systems for the Orange County Sanitation District (OCSD), with a small portion going to County Sanitation Districts of Los Angeles County for conveyance, treatment and disposal by these agencies. The entire Buena Park collection system is comprised of approximately 165 miles of sewer lines ranging in size from six to 21 inches in diameter. All sewage flows from Buena Park to the OCSD Treatment Plant No. 2 in the City of Huntington Beach. This facility has a total primary treatment capacity of 168 million gallons per day (mgd), with an average daily treatment of approximately 127 mgd. Therefore, the plant has an additional treatment capacity of approximately 41 mgd. Treatment Plant No. 2 also has 90 mgd of secondary treatment capacity.

The Project proposes 12 residential dwelling units at 3 bedrooms each, based on the 200 gallons per day (GPD) for three-bedroom apartments, the Project is anticipated to generate approximately 2,400 GPD.[19]. The amount of wastewater estimated to be generated by the Project would represent approximately 0.00006 percent of the treatment plant's remaining primary treatment capacity of 41 mgd. Therefore, there would be sufficient capacity available at Treatment Plant No. 2 to meet the needs of the Project.

The site is served by an existing sanitary sewer network, as the Project site was formerly used for four (4) single-family dwelling units. New connections to the existing sewer lines in Craig Avenue would be installed. Sewer line sizes and connections would be subject to review and approval by the City. No new treatment facilities or expanded entitlements would be required. Therefore, the Project would have a less than significant impact on existing wastewater treatment facilities.

Domestic Water –The City relies on two major water supply sources, including imported water from the Metropolitan Water District (MWD) and local groundwater from the Orange County Groundwater Basin, managed by the Orange County Water District (OCWD). As of 2015, the City relies on approximately 73 percent groundwater and 27 percent imported water for drinking water supply[20].

The City's 2020 Urban Water Management Plan (UWMP) states that the City's drought risk assessment (DRA) reveals that its supply capabilities are expected to balance anticipated total water use and supply, assuming a five-year consecutive drought from FY 2020-21 through FY 2024-25 (Table 7-5) of the 2020

[19] City of Los Angeles, LA CEQA Threshold Guide 2006, Exhibit M 2-24, Sewage Generation Factors, page M.2-22. Available at https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/A07.pdf. (Accessed March 2023).
[20] Arcadis. 2020. City of Buena Park, 2020 Urban Water Management Plan. Final Draft.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

UWMP. The Project would connect to the existing water lines on Craig Avenue. As analyzed in Response 4.19 (b), the Project would result in an increase in water demand compared to existing conditions; however, the increase would be nominal and overall has been assumed in the 2035 GP and 2022 UWMP.

Stormwater – Stormwater would be captured onsite via a proposed bio-retention basin using pervious concrete and underdrain system. The water collected would then be released via storm drains at the same rate as existing conditions. Therefore, impacts regarding stormwater would be less than significant.

Electric Power: Electric power for the City of Buena Park is provided by Southern California Edison (SCE). The Project is in a fully developed area, and infrastructure for providing electric power to the area is well established. SCE typically utilizes existing utility corridors to reduce environmental impacts and has energy-efficiency programs to reduce energy usage and maintain reliable service throughout the year. The Project would be constructed in accordance with all applicable CBC Regulations, Title 24, and would not require the construction or relocation of electric power facilities. Therefore, a **less than significant** impact would occur.

Natural Gas: SoCalGas is the primary distributor of retail and wholesale natural gas across Southern California, including the City. SoCalGas provides services to residential, commercial, and industrial consumers, and also provides gas for electric generation customers.

In its 2018 California Gas Report, SoCalGas analyzed an 18-year demand period, from 2022-2035, to determine its ability to meet projected demand[21]. SoCalGas expects total gas demand to decline at an annual average rate of 2.4 percent annually, a faster decline than the 1.7 percent annual rate of decline that had been forecasted in the 2020 Report. Moreover, SoCalGas plans on implementing aggressive energy-efficiency programs that will result in natural gas savings across all sectors that will ensure longevity of its natural gas supplies and adequate generation rates. Therefore, anticipated natural gas supply is adequate to meet demand in the SoCalGas region, and the Project is not expected to impact this determination. Thus, no natural gas facilities would have to be constructed or relocated, and a **less than significant** impact would occur.

Telecommunications Facilities: Cable services, including internet, phone, and television, are provided in the City of Buena Park by Spectrum Cable and AT&T U-Verse, Verizon, Sprint and T-Mobile[22]. The proposed project would not interfere with operation of existing or future facilities, and a **less than significant** impact would occur.

b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?	☐	☐	☒	☐

19b. Response: (*Source: 2035 General Plan EIR; City of Buena Park 2020 Urban Water Management Plan: https://cms7files1.revize.com/buenaparkca/BuenaPark2020UWMPFINALDRAF.pdf*)

Less than Significant Impact. Refer to Response 19(a) above. Pursuant to SB 610, the Project does not require a Water Supply Assessment. The City's UWMP provides insight on the City's water supply and demand and must be updated every five years to include the most recent population trends. The City meets its water needs through a combination of local groundwater (80%) from the Orange County Groundwater Basin, managed by OCWD, and supplemental imported water (20%) from MWD. As discussed in Response 19(a), above, the increase in residential density as proposed by the Project would result in a nominal increase to water supply

[21] SoCalGas. 2022. California Gas Report. https://www.socalgas.com/sites/default/files/Joint_Utility_Biennial_Comprehensive_California_Gas_Report_2022.pdf. Accessed January 3, 2023.
[22] City of Buena Park. May 2020. *Utility Updates.* https://www.buenapark.com/residents/covid-19_information/utility_updates.php. Accessed January 3. 2023.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
demand. Consequently, the Project is not anticipated to exceed expected water supplies. Therefore, the Project will have a **less than significant impact** resulting in the insufficient water supplies.				
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?	☐	☐	☒	☐

19c. Response: ***(Source: 2035 General Plan EIR Section 5.12 Wastewater, Table 5.12-5 General Plan Update Wastewater Flows)***

Less than Significant Impact. Based on factors included in the General Plan EIR (Table 5.12-5) for High Density Residential, the Project would generate an estimated 1,920 gallons per day (GPD) of wastewater. This represents approximately 0.02% of the total estimated GPD for the City at 2035 GP buildout. As noted in the 2035 GP EIR, the anticipated increase in demands on the City's existing sewer system would increase demands on the Orange County Sanitation District (OCSD) and County Sanitation Districts of Los Angeles County (CSDLAC) regional trunk sewer systems, and at the OCSD's Plant No. 2. The capacity at OCSD's Plant No. 2 is equipped to adequately handle GP buildout as described in the GP EIR. Additionally, the Project site is not located in an area affected by identified "problem areas" in sewer infrastructure. While the Project proposes higher density development within the Project site than is currently permitted, the increase in residential uses would add nominally to total wastewater generation that would be served by OCSD and, consequently, would not have a substantial adverse effect on the regional wastewater system. Therefore, Project impacts related to the wastewater treatment has adequate capacity to serve the Project and existing commitments would be **less than significant**.

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?	☐	☐	☒	☐

19d. Response: ***(Source: 2035 General Plan EIR Section 5.17 Solid Waste, Table 5.17-2 Net Increase in Solid Waste Generation)***

Less than Significant Impact. Based on factors included in the General Plan EIR (Table 5.17-2) for residential uses, the Project would generate an estimated 147 lbs/day of solid waste. This represents approximately 0.002% of the total estimated solid waste generation for the City at 2035 GP buildout. According to the GP EIR, the anticipated increase in solid waste at GP buildout is adequately accommodated by existing landfills.

The City contracts with Park Disposal for collection and disposal of the City's solid waste. The waste stream generated by the City is processed and sorted at the CR&R, Inc. Materials Recovery Facility located at 11292 Western Avenue in the City of Stanton. Most of the City's solid waste is disposed at one of Orange County's three active landfills: Frank R. Bowerman Landfill in Irvine; Olinda Alpha Landfill in Brea; Prima Deshecha Landfill in San Juan Capistrano.

The Frank R. Bowerman landfill is 725 acres, with a maximum permitted capacity of 11,500 tons per day. This landfill is expected to close in December 2053. Olinda Alpha has 420 acres dedicated for disposal use with a maximum permitted capacity of 8,000 tons per day and it is expected to close in December 2036 Prima Deshecha has 697 acres dedicated for waste disposal with a maximum permitted capacity of 4,000 tons per day and is expected to close at the year end of 2102.

Construction

Project construction would generate solid waste requiring disposal at local landfills. Materials generated during construction of the Project would include paper, cardboard, metal, plastics, glass, concrete, lumber

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

scraps and other materials. During construction, bulk solid waste, excess building material, fill, etc., would be disposed of in a manner consistent with State of California Integrated Waste Management Act of 1989.

Operation

The current permitted solid waste disposal includes 11,500 tons per day at the Frank R. Bowerman Landfill, 8,000 tons per day at Olinda Alpha Landfill and 4,000 tons per day at the Prima Deshecha Landfill. The Project's estimated generation of approximately 12.23 pounds per dwelling unit per day (or a total of approximately 147 pounds per day) during Project operation represents a negligible amount of the total daily capacity at the three landfills. Since sufficient permitted landfill capacity exists to support the Project, no adverse impact on either solid waste collection service or the landfill disposal system would occur. Therefore, Project impacts on existing solid waste disposal facilities would be **less than significant**.

e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

19e. Response: (*Source: 2035 General Plan EIR Section 5.17 Solid Waste)*

Less than Significant Impact. The California Integrated Waste Management Act requires that local jurisdictions divert at least 50 percent of all solid waste generated by January 1, 2000. At the time of 2035 General Plan adoption, the City was achieving a 53 percent diversion rate, achieving State requirements. In addition, the California Green Building Code requires all developments to divert 50 percent of non-hazardous construction and demolition debris for all projects and 100 percent of excavated soil and land clearing debris for all non-residential projects beginning January 1, 2011. The Project would comply with the City's waste disposal requirements as well as the California Green Building Code and as such would not conflict with any federal, State, or local regulations related to solid waste. Therefore, **less than significant impacts** related to solid waste statutes would occur.

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
20. WILDFIRE 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?	☐	☐	☐	☒

20a. Response: ***(Source:*** *2035 General Plan EIR Section 5.13 – Fire Protection; Title 18 of the City of Buena Park Municipal Code; CALFIRE Fire Hazard Severity Zone viewer: https://egis.fire.ca.gov/FHSZ/)*

No Impact. In 2008, CALFIRE produced Fire Hazard Severity Zone maps for the areas of California where local governments have financial responsibility for wildland fire protection, known as local responsibility areas. In 2008, the California Building Standards Commission adopted California Building Code Chapter 7A requiring new buildings in Very High Fire Hazard Severity Zones to use ignition-resistant construction methods and materials.

According to the GP EIR, there are no wilderness areas within the City and therefore there is a nonexistent risk of wildfire. The Project site lies within a heavily urbanized area and is not within a wildland urban interface. Similarly, CALFIRE Fire Hazard Severity viewer, shows that the Project site is not located within a Local responsibility Area or in an area designated as a fire hazard severity zone.

The Project would maintain adequate access via Craig Avenue to Beach Boulevard (SR-39). Main Project site vehicular access would be provided via one twenty-foot-wide paved driveway located on the northeast corner of the site along Craig Avenue. The Project driveway would be designed in accordance with the City's MC 18.92.010, Access Requirements, by providing emergency vehicle access and mobility through a twenty-five-foot-wide internal driveway. Evaluation and approval of the proposed site plan by the Orange County Fire Authority (OCFA) would be required to ensure adequacy of emergency access. As such, the Project would not interfere with the City's Emergency Operations Plan because it does not contain any features that would prohibit the execution of such plans. **No impact** would occur.

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?	☐	☐	☐	☒

20b. Response: (*Source: 2035 General Plan Safety Element*)

No Impact. The City of Buena Park is subject to relatively flat topography and a lack of wildland urban interface areas due to the highly urbanized nature of the area. The Project site is likewise located in an area of flat topography and devoid of wildland that would make the area subject to wildfire. As noted in Response 20(a), above, the Project site is not located in an area designated by CALFIRE as having a very high fire hazard. Because the Project site is not located in an area identified as a fire hazard zone, it is anticipated that the proposed Project would not exacerbate wildfire risks, and thereby would not expose Project occupants to pollutant concentrations from a wildfire. **No impact** would occur.

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?	☐	☐	☐	☒

20c. Response: (Source: *2035 General Plan Safety Element)*

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
No Impact. Other than the addition of a new concrete sidewalk and parkway along Craig Avenue, proposed Project components would be within the Project site property lines, and impacts associated with the development of the Project within this footprint area are analyzed throughout this document. The Project does not propose the construction of roads, fuel breaks, emergency water sources, power lines, or other utilities. Being located outside of a designated fire hazard severity zone, the Project does not represent a significant impact relative to fire risk, as discussed in Response 20(a) above. Additionally, the City's Fire Department, as part of the City's process, will review all building permit plans for adequate fire suppression, fire access, and emergency evacuation. Adherence to standard City policies reduce the potential to exacerbate fire risk. Therefore, **no impact** would occur.				
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒
20d. Response: ***(Source: 2035 General Plan Safety Element, Exhibit SAF-4 FEMA Flood Zones; FEMA Flood Map Service Center, FIRM Map 06059C0038J [effective on 12/03/2009]: https://msc.fema.gov/portal/home/)***				
No Impact. As discussed in Response 7(iv), Geology and Soils, the Project site is not located in a landslide hazard area, or a floodplain and no signs of flooding or erosion were visible during the geotechnical study site visit. The Project site is relatively flat and is not located in a landslide-prone zone. Additionally, according to Exhibit SAF-4 FEMA Flood Zones of the 2035 GP, the Project site is not located within a 100 Year Flood Zone which indicates that the site has a low potential of flooding but is located within the 500-Year Flood Zone which is recognized as an area of minimal flood hazards. Therefore, **no impact** to people or structures from risk of downslope or downstream flooding, landslides, post-fire instability, or drainage would occur.				
21. MANDATORY FINDINGS OF SIGNIFICANCE				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, 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?	☐	☒	☐	☐
21a. Response:				
Less than Significant with Mitigation Incorporated. The Project would involve the construction of two (2) three-story 12-unit townhouse-style apartments. As described above, the Project would result in several potentially significant Project-level impacts including biological resources from construction of the proposed Project which could result in the disturbance of nesting birds from ground disturbing activities. As such, implementation of **MM BIO-1** would reduce impacts to biological resources to **less than significant**.				
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐

ISSUES (AND SUPPORTING INFORMATION SOURCES):	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
21b. Response: **Less than Significant with Mitigation Incorporated.** The Project would contribute minimally to cumulative development impacts within the region. The Project would create several potentially significant impacts relating to biological resources, cultural resources, and geology and soils. However, the Project would adequately mitigate all potential impacts to less than significant levels with implementation of the Mitigation Measures, thereby reducing the Project's cumulative impacts. Therefore, cumulative impacts would be **less than significant**.				
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐
21c. Response: **Less than Significant with Mitigation Incorporated.** The proposed Project is not anticipated to result in significant Project-level impacts on human beings. Mitigation measures have been identified (MM BIO-1, MM CUL-1, MM GEO-1 through GEO-10, MM HAZ-MAT-1, and MM TCR-1 through TCR-3) that would reduce impacts to biological and cultural resources, geology and soils, and tribal cultural resources to a **less than significant**. The Mitigation Monitoring and Reporting Program (MMRP) provides specific details on each Mitigation Measure and the responsible parties.				

SECTION 3: REFERENCES

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Staff Recommended Mitigation Measures
Mitigation Monitoring and Reporting Program (MMRP)

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
MM BIO 1: Migratory Bird Treaty Act and Fish and Game Code. If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.	Qualified Biologist	During Construction Activities.	Evaluation
Cultural Resources			
MM CUL 1: Prior to the initiation of ground-disturbing activities, field personnel should be alerted to the possibility of buried prehistoric or historic cultural deposits. In the event that field personnel encounter buried cultural materials, work in the immediate vicinity of the find should cease and a qualified	Field Personnel, Construction Crew.	During Construction Activities.	Evaluation

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
archaeologist should be retained to assess the significance of the find. The qualified archaeologist shall have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist finds that any cultural resources present meet eligibility requirements for listing on the California Register or the National Register, plans for the treatment, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include: • historic artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects, • historic structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements, • prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates, • groundstone artifacts, including mortars, pestles, and grinding slabs, • dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks.			
Geology and Soils			
MM GEO-1 (General Grading): Grading areas must be stripped of all vegetation, debris, and other deleterious material. All loose soil disturbed by the removal of trees and/or structures (if applicable) must be removed and recompacted. The existing fill is up to approximately two (2) feet thick and is not suitable for foundation support. Where compacted earth materials are supporting the structural load, a minimum of three (3) feet below the bottom of the proposed mat foundation, and an area, comprised of a minimum of five (5) feet (or equal to the depth of removal, whichever is greater) beyond the footprint of the	Project Applicant and City of Buena Park.	During Construction Activities.	Follow Geotechnical Report Recommendations

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
proposed structure, must be over-excavated. At locations where new fill is proposed, the existing fill must be entirely removed and replaced with a certified engineered fill. The proposed new fill must be placed in horizontal layers and must be benched into undisturbed competent younger alluvial deposits.			
MM GEO-2 (Survey Before and During Construction – Blemish Survey): Prior to groundbreaking, the owner (the contractor) needs to perform a comprehensive survey of the neighboring properties, which shall include the services of a licensed surveyor and the observation of the existing buildings and other structures, records of all observed existing signs of lateral movement and settlement, supplemented with pictures and other documents. After completion of the installation, the shoring must be periodically monitored by a licensed surveyor for a lateral deflection of the vertical elements. The monitoring of the shoring must be performed not less than once every week. The first reading must be taken immediately after the completion of installation of the shoring, and consecutive readings must be taken on a weekly basis. The maximum lateral deflection of the shoring system must be limited to one-half (½) of an inch. In the event that lateral movements of the shoring in excess of one-half (½) of an inch are encountered, the consulting geotechnical-engineer-of-record and structural-engineer-of- record must be notified immediately.	Project Applicant and City of Buena Park.	Prior and During Construction Activities.	Follow Geotechnical Report Recommendations
MM GEO-3 (Foundations): The proposed structure must be supported by a mat foundation. The proposed mat foundation must be founded into certified engineered fill. Where compacted earth materials are supporting the structural load, a minimum of three (3) feet below the bottom of the proposed mat foundation, and an area, comprised of a minimum of five (5) feet (or equal to the depth of removal, whichever is greater) beyond the footprint of the proposed structure, must be over-excavated. The fill, placed in over-excavated area, must be compacted. In addition, the bottom of the proposed mat foundation must be below a plane with a slope of one horizontal to one vertical	Project Applicant and City of Buena Park.	During Construction Activities.	Follow Geotechnical Report Recommendations

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
(1:1) projected upward from the bottom edge of adjacent existing footings (if applicable). An allowable bearing capacity of 1,000 psf must be used for soils beneath the proposed mat foundation, founded a minimum of twenty-four (24) inches into certified engineered fill. The maximum loading for the mat foundation in localized areas should not exceed 1,500 psf, and the maximum extent of the area allowed with the maximum localized loading should not exceed 15 feet by 15 feet. The allowable bearing value is for dead-plus-live loads and may be increased by thirty (30) percent for momentary wind and seismic loads. The following minimums apply to all footings: 1. The proposed mat foundation must be founded a minimum of twenty-four (24) inches into certified engineered fill. 2. The final design of the proposed mat foundation must be provided by a structural engineer in conjunction with this office. 3. A coefficient of friction of 0.25 must be utilized for resisting lateral loads at the contact surface of concrete and foundation soils. 4. Passive earth pressure increasing at the maximum rate of 250 psf per foot of depth, to a maximum of 2,500 psf, may be used in calculations. 5. The design modulus of subgrade reaction (Ks) for the subject property is 150 kcf. 6. Frictional and passive resistance of the proposed mat foundation may be combined, provided the passive bearing resistance does not exceed two-thirds of the allowable passive bearing. 7. All concrete elements of the substructure, which are in contact with the soil, must be constructed from concrete based on Cement Type V for highly corrosive soils.			

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<tr><th>Mitigation Measure</th><th>Responsible Party</th><th>Timing</th><th>Monitoring Action</th></tr>
<tr><td colspan="4">Biological Resources</td></tr>
<tr><td>8. The damp-proofing for protection of the floors and wooden structures must be designed by a waterproofing specialist, due to the highest historic water level recorded near the ground surface of the Project site.</td><td></td><td></td><td></td></tr>
<tr><td>MM GEO-4 (Seismic Design Parameters): The proposed Project structural design must conform with the 2022 California Building Code, as shown below:

<table>
<tr><td>Latitude</td><td>33° 52’ 42” N</td></tr>
<tr><td>Longitude</td><td>117° 59’ 58” W</td></tr>
<tr><td>Site Classification</td><td>D</td></tr>
<tr><td>Site Coefficient, F_a</td><td>1.2</td></tr>
<tr><td>Site Coefficient, F_v</td><td>1.7</td></tr>
<tr><td colspan="2">Site Spectral Response Acceleration Parameters (g):</td></tr>
<tr><td>Mapped Acceleration, Ss (0.2 sec.)</td><td>1.556</td></tr>
<tr><td>Mapped Acceleration, S_1 (1 sec.)</td><td>0.551</td></tr>
<tr><td>Adjusted Maximum Acceleration, SMS (0.2 sec.</td><td>1.867</td></tr>
<tr><td>Adjusted Maximum Acceleration, SM1 (1 sec.)</td><td>0.937</td></tr>
<tr><td>Design Acceleration, SDS (0.2 sec.)</td><td>1.245</td></tr>
<tr><td>Design Acceleration, SD1 (1 sec.)</td><td>0.624</td></tr>
<tr><td colspan="2">Source: SASSAN Geosciences, Inc. November 22, 2022. Geotechnical Report. Page, 16.</td></tr>
</table></td><td>Project Applicant and City of Buena Park.</td><td>During Design Activities.</td><td>Follow Geotechnical Report Recommendations</td></tr>
<tr><td>MM GEO-5 (Engineering Fill): All fill earth materials must consist of clean soil that is free of vegetation and other debris. The fill must be placed in six- (6-) to eight- (8-) inch thick lifts at near optimum moisture content and compacted. Particles larger than three (3) inches in diameter must not be allowed in the backfill material. Earth materials must not be imported to the site without prior approval by the soil</td><td>Project Applicant and City of Buena Park.</td><td>During Construction Activities.</td><td>Follow Geotechnical Report Recommendations</td></tr>
</table>

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
engineer. All engineered fill must be compacted to a minimum of ninety (90) percent of its maximum dry density (ASTM 7-16). Where cohesionless soil having less than fifteen (15) percent finer than 0.005 millimeter is used for fill, it must be compacted to a minimum of ninety-five (95) percent of its maximum dry density. Neither jetting nor water tamping are permitted. Heavy construction equipment must be maintained at a minimum distance of three (3) feet from the existing structures. Hand-operated compaction equipment must be used to compact the backfill soils within this 3-foot-wide zone.			
MM GEO-6 (Driveway and External Slabs-On-Grade): The subgrade for the proposed driveway and external slabs-on-grade must consist of a minimum two (2) foot thick layer of certified compacted fill. The competent subgrade must be covered with four (4) inches of crushed miscellaneous aggregate (CMA) and compacted to ninety-five percent (95%) of its maximum dry density (ASTM 7-16). The CMA must be covered by asphalt concrete, concrete slab, stone pavers or equal.	Project Applicant and City of Buena Park.	During Construction Activities.	Follow Geotechnical Report Recommendations
MM GEO-7 (Pipe Bedding and Trenching Backfill): The pipe bedding must consist of sand or similar granular material having a minimum sand equivalent value of thirty (30). The sand must be placed in a zone that extends a minimum of six (6) inches below and twelve (12) inches above the pipe for the full trench width. The bedding material must be compacted. The trench backfill above the pipe bedding may consist of approved, on-site or imported soils, and it must be compacted. Where utility trenches are parallel to the footings, the bottom of the trench must be located above a plane with a slope of 1:1, projected downward from the adjacent bottom edge of the footing.	Project Applicant and City of Buena Park.	During Construction Activities.	Follow Geotechnical Report Recommendations
MM GEO-8 (Site Drainage): The drainage devices such as sloping sidewalks and area drains must be provided around the building to collect and direct all water away from the structure. Neither rain nor excess irrigation water should be allowed	Project Applicant and City of Buena Park.	During Construction Activities.	Follow Geotechnical Report Recommendations

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
to collect or pond against foundations. The collected water must be directed to the proper drainage system via non-erosive devices. The actual site drainage, however, must be designed by the consulting civil engineer-of-record. Additionally, based on the site's liquefaction potential, additional moisture must not be injected into the grounds. As such, the use of permeable pavers or similar ground covers at the Project site is not recommended.			
MM GEO-9 (Design Review): The geotechnical aspects of the Project should be reviewed during the design process by the geotechnical specialist preparer. The scope of the services may include assistance to the design team by providing specific recommendations for special cases, reviewing the foundation design, reviewing the geotechnical portions of the Project for possible costs savings through alternative approaches, and evaluating the overall applicability of the recommendations provided herein from the preparation of the geotechnical report. Additional site-specific explorations may also be considered if significant foundation modifications are required using the above recommendations. The owner should anticipate that the consulting soils engineer must review and approve the detailed plans prior to issuance of any permits. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans include the recommendations contained in their reports.	Project Applicant and City of Buena Park.	During Design Process.	Follow Geotechnical Report Recommendations
MM GEO-10 (Inspections): All excavations must be inspected and approved by the geotechnical engineer. All fill placed for engineering purposes must be tested for compaction and moisture content and certified. Inspection of excavations may also be required by the appropriate reviewing governmental agencies.	Project Applicant and City of Buena Park.	During Construction Activities.	Follow Geotechnical Report Recommendations

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
It is recommended that SASSAN Geosciences, Inc., be retained to verify compliance with the recommendations made in the geotechnical report, to ensure compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event that exposed subsurface conditions differ from those anticipated in the geotechnical report. Additionally, a joint meeting among the parties involved in this Project is recommended prior to the start of groundbreaking to discuss specific procedures and scheduling. Inspections performed by SASSAN Geosciences, Inc., are for verification purposes only and shall under no circumstance relieve other parties involved in the design and construction from their obligation to perform work in accordance with the approved plans.			
Hazards and Hazardous Materials			
MM HAZ-MAT-1: The Traffic Management Plan (TMP) must be reviewed and approved by the City's Traffic Engineer prior to the start of construction activity in the public ROW. Depending on the Project activities to take place during construction within the public ROW, the TMP could requires the installation of K-Rail between the construction area and open traffic lanes, the use of flagmen and directional signage to direct traffic where only one travel lane is available or when equipment movement creates temporary hazards, and the installation of steel plates to cover trenches under construction, if necessary. Emergency access must be maintained. Compliance with City requirements for traffic management during construction in the public ROW.	Project Applicant and City of Buena Park.	Prior to Start of Construction Activities.	City's Traffic Engineer
Tribal Cultural Resources			
MM TCR-1 (Retain a Native American Monitor Prior to Commencement of Ground-Disturbing Activities): **A.** The Project applicant/lead agency shall retain a Native American Monitor from or approved by the Gabrieleño Band of Mission Indians – Kizh Nation. The monitor shall be retained prior to the	Project Applicant and City of Buena Park.	Prior to commencement of any ground disturbing activities.	Native American Monitor

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
commencement of any "ground-disturbing activity" for the subject project at all project locations (i.e., both on-site and any off-site locations that are included in the project description/definition and/or required in connection with the project, such as public improvement work). "Ground-disturbing activity" shall include, but is not limited to, demolition, pavement removal, potholing, auguring, grubbing, tree removal, boring, grading, excavation, drilling, and trenching. **B.** A copy of the executed monitoring agreement shall be submitted to the lead agency prior to the earlier of the commencement of any ground-disturbing activity, or the issuance of any permit necessary to commence a ground-disturbing activity. **C.** The monitor will complete daily monitoring logs that will provide descriptions of the relevant ground-disturbing activities, the type of construction activities performed, locations of ground-disturbing activities, soil types, cultural-related materials, and any other facts, conditions, materials, or discoveries of significance to the Tribe. Monitor logs will identify and describe any discovered TCRs, including but not limited to, Native American cultural and historical artifacts, remains, places of significance, etc., (collectively, tribal cultural resources, or "TCR"), as well as any discovered Native American (ancestral) human remains and burial goods. Copies of monitor logs will be provided to the project applicant/lead agency upon written request to the Tribe. **D.** On-site tribal monitoring shall conclude upon the latter of the following (1) written confirmation to the Kizh from a designated point of contact for the project applicant/lead agency that all ground-disturbing activities and phases that may involve ground-disturbing activities on the project site or in connection with the project are complete; or (2) a determination and written notification by the Kizh to the project applicant/lead agency that no future, planned construction activity and/or development/construction phase at the project site possesses the potential to impact Kizh TCRs.			

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
E. Upon discovery of any TCRs, all construction activities in the immediate vicinity of the discovery shall cease (i.e., not less than the surrounding 50 feet) and shall not resume until the discovered TCR has been fully assessed by the Kizh monitor and/or Kizh archaeologist. The Kizh will recover and retain all discovered TCRs in the form and/or manner the Tribe deems appropriate, in the Tribe's sole discretion, and for any purpose the Tribe deems appropriate, including for educational, cultural and/or historic purposes.			
MM TCR-2 (Unanticipated Discovery of Human Remains and Associated Funerary Objects): **A.** Native American human remains are defined in PRC 5097.98 (d)(1) as an inhumation or cremation, and in any state of decomposition or skeletal completeness. Funerary objects, called associated grave goods in Public Resources Code Section 5097.98, are also to be treated according to this statute. **B.** If Native American human remains and/or grave goods discovered or recognized on the project site, then all construction activities shall immediately cease. Health and Safety Code Section 7050.5 dictates that any discoveries of human skeletal material shall be immediately reported to the County Coroner and all ground-disturbing activities shall immediately halt and shall remain halted until the coroner has determined the nature of the remains. If the coroner recognizes the human remains to be those of a Native American or has reason to believe they are Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission, and Public Resources Code Section 5097.98 shall be followed. **C.** Human remains and grave/burial goods shall be treated alike per California Public Resources Code section 5097.98(d)(1) and (2). **D.** Construction activities may resume in other parts of the project site at a minimum of 200 feet away from discovered human remains and/or burial goods, if the Kizh determines in its sole	Project Applicant and City of Buena Park.	During ground disturbing activities.	Native American Monitor

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
discretion that resuming construction activities at that distance is acceptable and provides the project manager express consent of that determination (along with any other mitigation measures the Kizh monitor and/or archaeologist deems necessary). (CEQA Guidelines Section 15064.5(f)). **E.** Preservation in place (i.e., avoidance) is the preferred manner of treatment for discovered human remains and/or burial goods. Any historic archaeological material that is not Native American in origin (non-TCR) shall be curated at a public, non-profit institution with a research interest in the materials, such as the Natural History Museum of Los Angeles County or the Fowler Museum, if such an institution agrees to accept the material. If no institution accepts the archaeological material, it shall be offered to a local school or historical society in the area for educational purposes. **F.** Any discovery of human remains/burial goods shall be kept confidential to prevent further disturbance.			
MM TCR-3 (Procedure for Burials and Funerary Remains): **A.** As the Most Likely Descendant ("MLD"), the Koo-nas-gna Burial Policy shall be implemented. To the Tribe, the term "human remains" encompasses more than human bones. In ancient as well as historic times, Tribal Traditions included, but were not limited to, the preparation of the soil for burial, the burial of funerary objects with the deceased, and the ceremonial burning of human remains. **B.** If the discovery of human remains includes four or more burials, the discovery location shall be treated as a cemetery and a separate treatment plan shall be created. **C.** The prepared soil and cremation soils are to be treated in the same manner as bone fragments that remain intact. Associated funerary objects are objects that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later; other items made exclusively for burial purposes or to contain human remains can also be considered as associated funerary objects. Cremations	Project Applicant and City of Buena Park.	During any ground disturbing activities.	Native American Monitor

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
will either be removed in bulk or by means as necessary to ensure complete recovery of all sacred materials. **D.** In the case where discovered human remains cannot be fully documented and recovered on the same day, the remains will be covered with muslin cloth and a steel plate that can be moved by heavy equipment placed over the excavation opening to protect the remains. If this type of steel plate is not available, a 24-hour guard should be posted outside of working hours. The Tribe will make every effort to recommend diverting the project and keeping the remains in situ and protected. If the project cannot be diverted, it may be determined that burials will be removed. **E.** In the event preservation in place is not possible despite good faith efforts by the project applicant/developer and/or landowner, before ground-disturbing activities may resume on the project site, the landowner shall arrange a designated site location within the footprint of the project for the respectful reburial of the human remains and/or ceremonial objects. **F.** Each occurrence of human remains and associated funerary objects will be stored using opaque cloth bags. All human remains, funerary objects, sacred objects and objects of cultural patrimony will be removed to a secure container on site if possible. These items should be retained and reburied within six months of recovery. The site of reburial/repatriation shall be on the project site but at a location agreed upon between the Tribe and the landowner at a site to be protected in perpetuity. There shall be no publicity regarding any cultural materials recovered. **G.** The Tribe will work closely with the project's qualified archaeologist to ensure that the excavation is treated carefully, ethically and respectfully. If data recovery is approved by the Tribe, documentation shall be prepared and shall include (at a minimum) detailed descriptive notes and sketches. All data recovery data recovery-related forms of documentation shall be approved in advance by the Tribe. If any data recovery is performed, once complete, a final report shall be submitted to the Tribe and			

Mitigation Measure	Responsible Party	Timing	Monitoring Action
Biological Resources			
the NAHC. The Tribe does NOT authorize any scientific study or the utilization of any invasive and/or destructive diagnostics on human remains.			

City Standard Conditions (SC)

Standard Condition	Responsible Party	Timing	Monitoring Action
Cultural Resources			
SC 5.1: Archaeological resources found prior to or during construction shall be evaluated by a qualified archaeologist, and appropriate mitigation measures applied, pursuant to Public Resources Code Section 21083.2 or 21084.1, as applicable, before the resumption of development activities. Any measures applied shall include the preparation of a report meeting accepted industry standards, which shall be submitted to the appropriate California Historical Resources Information System (CHRIS) Information Center (IC).	Qualified Archaeologist	Prior to or during Construction Activities.	Evaluation
SC 5.2: During excavation and grading activities of any future development project, if archaeological resources are discovered, the project contractor shall stop all work and shall retain a qualified archaeologist to evaluate the significance of the finding and appropriate course of action. Salvage operation requirements pursuant to Section 15064.5 of the CEQA Guidelines shall be followed and the treatment of discovered Native American remains shall comply with State codes and regulations of the Native American Heritage Commission.	Qualified Archaeologist	During excavation or grading activities.	Evaluation
SC 5.3: In the event of the discovery of a burial, human bone, or suspected human bone, all excavation or grading in the vicinity of the find shall halt immediately and the area of the find shall be protected, and the Project applicant shall immediately notify the Orange County Coroner of the find and comply with the provisions of the California Health and Safety Code Section 7050.5, including Public Resources Code Section 5097.98, if applicable. In the event that human remains are determined to be Native American human remains, the applicant shall consult with the Most	Project Applicant	During excavation or grading activities.	Evaluation

Standard Condition	Responsible Party	Timing	Monitoring Action
Cultural Resources			
Likely Descendent to determine the appropriate treatment for the Native American human remains.			
Geology and Soils			
SC 7.1: Paleontological resources found prior to or during construction shall be evaluated by a qualified paleontologist, and appropriate mitigation measures applied, pursuant to Section 21083.2 of CEQA, before the resumption of development activities. Any measures applied shall include the preparation of a report meeting accepted industry standards. .	Qualified Paleontologist	Prior to or during construction activities	Evaluation
SC 7.2: Any project that involves earth-disturbing activities in soil or rock units known or reasonably suspected to be fossil-bearing shall require monitoring by a qualified paleontologist retained by the project applicant for the duration of excavation or trenching.	Qualified Paleontologist	Prior to or during construction activities	Evaluation
Hydrology and Water Quality			
SC 10.1: Prior to issuance of grading or building permits, permit applicant shall submit for approval by the City engineer, a WQMP specifically identifying BMPs that will be used on site to control predictable pollutant runoff.	Project Applicant	Prior to issuance of grading or building permits	City engineer Evaluation

Appendix A1

Air Quality and Greenhouse Gas Analysis

Kimley»Horn

MEMORANDUM

To:	Ruben Salas, Kimley-Horn and Associates, Inc.
From:	Elena Ajdari, Kimley-Horn and Associates, Inc.
Date:	December 16, 2022
Subject:	Craig Apartments Development – Air Quality and Greenhouse Gas Analysis

Purpose

The purpose of this memorandum is to identify the air quality and greenhouse gas (GHG) emissions associated with construction and operations of the proposed Craig Apartments Development Project ("project" or "proposed project"), located in the City of Buena Park, California.

Project Location

The project site is a vacant 0.69-acre lot located at 7682, 7692, 7712, and 7722 Craig Avenue, in the City of Buena Park, Orange County, California, Assessor Parcel Numbers (APNs) 066-132-09, -15, -16, and 17. The project site has been heavily disturbed, and no native habitat nor ornamental habitat occurs onsite. The project site is surrounded by single family residential dwelling units to the north and west, with Craig Avenue directly adjacent to the north, commercial uses to the east and southeast, and the Brea Creek to the south. The site is relatively flat.

Project Description

The proposed project involves the construction of 12 three-story townhouse-style apartments. The apartments would be divided between two buildings, each containing 6 apartments. The two buildings would be built in tandem with one building facing Craig Avenue and the second building behind building one. The project would total approximately 23,655-square-feet (SF) of building space and would include drive-in vehicle garages at ground level and two above ground floors of living space. The project would include perimeter landscaping and green space buffering the project from the single-family residential dwelling unit (DU) to the west. The project would include pedestrian walkways, visitor parking, and perimeter/security lighting. See Exhibit 1: Conceptual Site Plan for more details. The project site has an existing (Low Density Residential) General Plan land use designation and a Single Family Residential (RS-6) zoning district and requires a General Plan Amendment (GPA) and a Zone Change (ZC) to Medium Density Residential (RM-20).

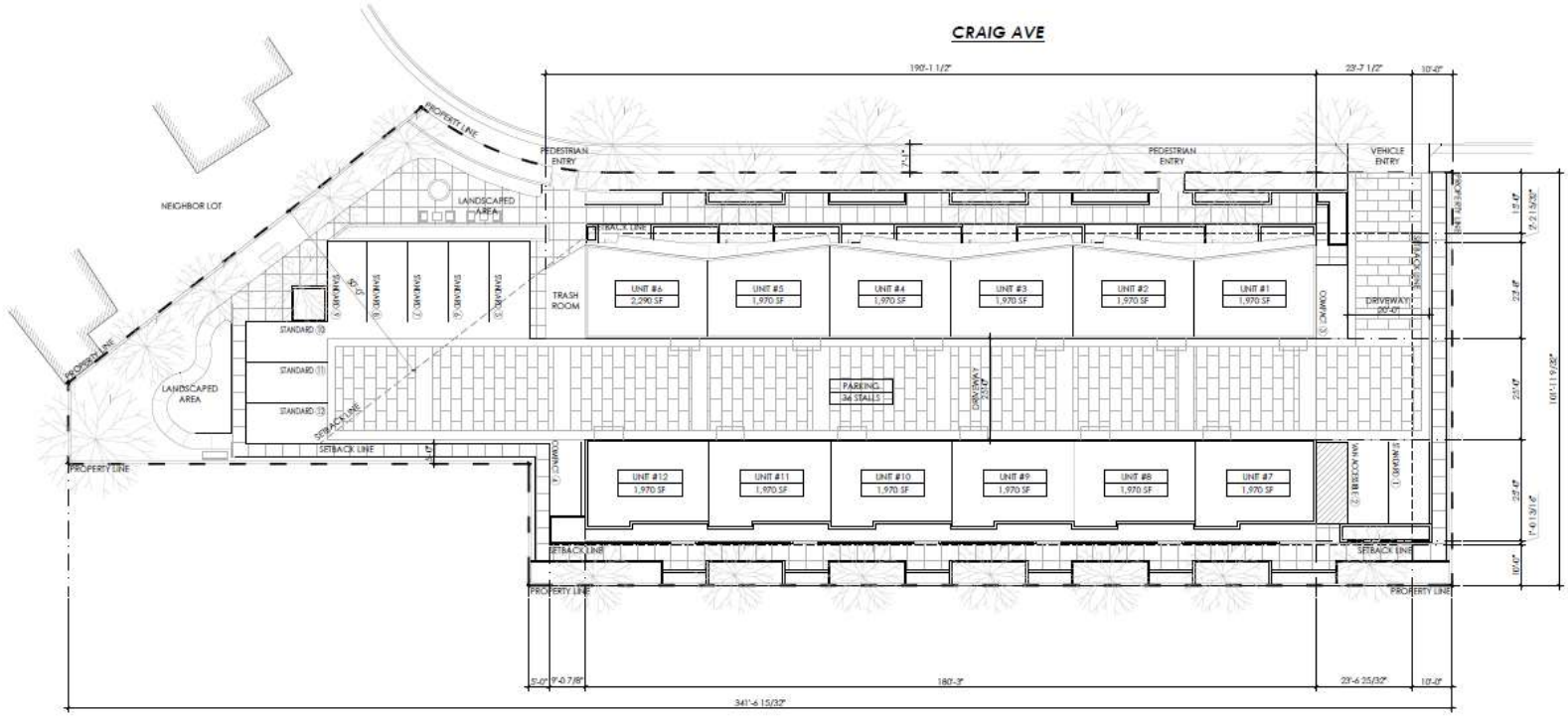
Site Access

Regional access is provided on Interstate 5 (I-5) via the Beach Boulevard ramps. Local access is provided via Beach Boulevard (Highway 39) and Craig Avenue. Main project site vehicular access would be provided via one twenty-foot-wide paved driveway located on the northeast corner of the site on Craig Avenue.

Parking

The project would provide thirty-six automobile parking spaces. Twenty-four of the parking spaces would be indoor (garage) parking spaces and twelve would be outdoor (visitor) parking spaces. Outdoor parking spaces would be mainly consolidated along the western side of the site with the balance of the outdoor parking spaces throughout the site.

Exhibit 1: Conceptual Site Plan



Air Quality Impacts

SCAQMD Thresholds

The Southern California Air Quality Management District (SCAQMD) California Environmental Quality Act (CEQA) Air Quality Handbook provides significance thresholds for volatile organic compounds (VOC) (also referred to as reactive organic gases [ROG]), nitrogen oxides (NO_X), carbon monoxide (CO), sulfur oxides (SO_X), particulate matter 10 microns or less in diameter (PM_{10}), and particulate matter 2.5 microns or less in diameter ($PM_{2.5}$). The thresholds apply to both project's construction and operation within the SCAQMD jurisdictional boundaries. If the SCAQMD thresholds are exceeded, a potentially significant impact could result. However, ultimately the lead agency determines the thresholds of significance for impacts. If a project proposes development in excess of the established thresholds, as outlined in Table 1: South Coast Air Quality Management District Significance Thresholds, a significant air quality impact may occur and additional analysis is warranted to fully assess the significance of impacts.

Table 1: South Coast Air Quality Management District Significance Thresholds

Pollutant	Mass Daily Thresholds (pounds per day)	
	Construction	Operations
Nitrogen Oxides (NO_X)	100	55
Volatile Organic Compounds (VOC)[1]	75	55
Particulate Matter up to 10 Microns (PM_{10})	150	150
Particulate Matter up to 2.5 Microns ($PM_{2.5}$)	55	55
Sulphur Oxides (SO_X)	150	150
Carbon Monoxide (CO)	550	550

Notes:

1. VOCs and reactive organic gases (ROGs) are subsets of organic gases that are emitted from the incomplete combustion of hydrocarbons or other carbon-based fuels. Although they represent slightly different subsets of organic gases, they are used interchangeably for the purposes of this analysis.

Source: South Coast Air Quality Management District, SCAQMD Air Quality Significance Thresholds, April 2019.

Air Quality Plan Consistency

As part of its enforcement responsibilities, the United States Environmental Protection Agency (EPA) requires each state with nonattainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The State Implementation Plan 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 state and federal 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 is located within the Southern California Air Basin (SCAB), which is under the jurisdiction of the SCAQMD. The SCAQMD is required, pursuant to the Federal Clean Air Act (FCAA), to reduce emissions of criteria pollutants for which the SCAB is in nonattainment. To reduce such emissions, the SCAQMD drafted the 2016 Air Quality Management Plan (AQMP). The 2016 AQMP establishes a program of rules and regulations directed at reducing air pollutant emissions and achieving state (California) and national air quality standards. 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 plan's pollutant control strategies are based on the latest scientific and technical information and planning assumptions, including SCAG's 2016 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 will 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 air quality standards or the interim emissions reductions specified in the AQMP.

- **Consistency Criterion No. 2**: The Project will not exceed the assumptions in the AQMP or increments based on the years of the Project build-out phase.

According to the SCAQMD's CEQA Air Quality Handbook, the purpose of the consistency finding is to determine if a project is inconsistent with the assumptions and objectives of the regional air quality plans, and thus if it would interfere with the region's ability to comply with California Ambient Air Quality Standards (CAAQS) and National Ambient Air Quality Standards (NAAQS).

The violations to which Consistency Criterion No. 1 refers are CAAQS and NAAQS. As shown in Table 2 and Table 3, the project would not exceed construction or operational emission standards. Therefore, the Project would not contribute to an existing air quality violation. Thus, 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 project would require a General Plan Amendment to change the existing land use designation from Low Density Residential to High Density Residential. Although the High-Density Residential land use designation proposes more intense development, the maximum population growth associated with project implementation would be

approximately 40 persons.[1] Therefore, the project would not cause exceedances in the population growth projection assumed by the SCAQMD to develop the AQMP. Thus, the project is consistent with the second criterion.

Based on these criteria, the Project would not conflict with or obstruct implementation of the AQMP and impacts would be less than significant.

Construction Emissions

Construction associated with the proposed project 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, NO_X, PM_{10}, and $PM_{2.5}$). Construction-generated emissions are short term and of temporary duration, lasting only as long as 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 for the project is estimated to be approximately nine months, beginning in July 2023 and finishing in March 2024. The project would construct 12 three-story townhouse-style apartments with drive-in vehicle garages at ground level and two above ground floors of living space, common open space, and parking spaces. Construction-generated emissions associated with the proposed project were calculated using the CARB- approved California Emissions Estimator Model (CalEEMod), which is designed to model emissions for land use development projects, based on typical construction requirements. See Appendix A: Air Quality and GHG Data for more information regarding the construction assumptions used in this analysis. Predicted maximum daily construction-generated emissions for the proposed project are identified in Table 2: Project Construction Emissions.

Table 2 shows that construction pollutant emissions would remain below their respective thresholds. While impacts would be considered less than significant, the proposed project would also be subject to SCAQMD Rules 402, 403, and 1113, which prohibit nuisances, require dust control measures, and limit VOC content in paints, respectively. Compliance with the standards SCAQMD rules would further reduce specific construction-related emissions. As shown above, all criteria pollutant emissions would remain below their respective thresholds and impacts would be less than significant.

[1] California Department of Finance, E-5 Population and Housing Estimates for Cities, Counties, and the State, January 2021-2022, with 2020 Benchmark, May 2022, https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2022/, accessed December 2022.

Table 2: Project Construction Emissions						
Construction Year	**Emissions (pounds per day)[1]**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2023	0.96	10.33	7.46	0.02	2.79	1.51
2024	5.04	6.07	7.55	0.01	0.43	0.30
Maximum Emissions	***5.04***	***10.33***	***7.55***	***0.02***	***2.79***	***1.51***
SCAQMD Threshold	75	100	550	150	150	55
SCAQMD Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Notes: 1. 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; 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.						
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.						

Operational Emissions

Operational emissions are typically associated with mobile sources (i.e., motor vehicle use) and area sources (such as the use of landscape maintenance equipment, hearths, consumer products, and architectural coatings). Energy source emissions would be generated from electricity and natural gas (non-hearth) usage. Table 3: Project Operational Emissions summarizes the operational emissions attributable to the proposed project. As shown in Table 3, the project's emissions would not exceed SCAQMD thresholds. Therefore, regional operational emissions would result in a less than significant long-term regional air quality impact.

Table 3: Project Operational Emissions						
Source	**Emissions (pounds per day)[1]**					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Area	0.57	0.18	1.06	<0.01	0.02	0.02
Energy	<0.01	0.03	0.01	<0.01	<0.01	<0.01
Mobile	0.15	0.17	1.57	<0.01	0.41	0.11
Total	**0.72**	**0.38**	**2.64**	**<0.01**	**0.43**	**0.13**
SCAQMD Threshold	55	55	550	150	150	55
SCAQMD Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Notes: 1. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0, as recommended by the SCAQMD. Worst-case seasonal maximum daily emissions are reported.						
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model outputs.						

Localized Construction Impacts

The nearest sensitive receptors to the project are single-family residences located approximately 19 feet to the northwest, single-family residences located approximately 66 feet to the north, and multi-family residences located approximately 180 feet to the southwest of the project site. 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 associated with project-specific level proposed projects.

Because 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: Equipment-Specific Grading Rates is used to determine the maximum daily disturbed acreage for comparison to LSTs.

For this project, the appropriate source receptor area (SRA) for the localized significance thresholds is the North Orange County (SRA 16) area since this area includes the project site. LSTs apply to NO_X, CO, PM_{10}, and $PM_{2.5}$. The SCAQMD produced look-up tables for projects that disturb areas less than or equal to 5 acres in size. Based on the daily equipment modeled in CalEEMod, project construction is anticipated to disturb approximately 1.5 acres in a single day. As such, the LSTs for a maximum daily disturbance of 1.5 acres were interpolated and used in this analysis.

Table 4: Equipment-Specific Grading Rates

Construction Phase	Equipment Type	Equipment Quantity	Acres Graded per 8-Hour Day	Operating Hours per Day	Acres Graded per Day
Grading	Tractor	1	0.5	8	0.5
	Graders	1	0.5	8	0.5
	Dozers	1	0.5	8	0.5
	Scrapers	0	0	0	0
				Total Acres Graded per Day	**1.5**

Source: CalEEMod version 2020.4.0.

SCAQMD's methodology indicates that "off-site mobile emissions from the project should not be included in the emissions compared to LSTs." Therefore, for purposes of the construction LST analysis, only emissions included in the CalEEMod "on-site" emissions outputs were considered. The nearest sensitive receptor to the project site is a single-family residence located 19 feet (5.8 meters) to the northwest of the project site. LST thresholds are provided for distances to sensitive receptors of 25, 50, 100, 200, and 500 meters. Therefore, as recommended by the SCAQMD, LSTs for receptors located at 25 meters were used in this analysis for receptors closer than 25 meters. Table 5: Localized Significance of Emissions, presents the results of localized emissions during construction activity.

Emissions of these pollutants on the peak day of construction would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, significant impacts would not occur concerning LSTs during construction activities.

Table 5: Localized Significance of Emissions

Source/Activity	Emissions (pounds per day)[1]			
	NO_X	CO	PM_{10}	$PM_{2.5}$
Construction Emissions				
Site Preparation 2023	6.19	3.92	0.45	0.23
Grading 2023	10.18	5.55	2.69	1.48
Building Construction 2023	6.42	7.10	0.32	0.29
Building Construction 2024	5.97	7.07	0.28	0.26
Paving 2024	5.23	7.03	0.24	0.23
Architectural Coating 2024	1.22	1.81	0.06	0.06
Maximum Daily Emissions	*10.18*	*7.10*	*2.69*	*1.48*
SCAQMD Localized Screening Threshold (1.5 acres of disturbance at 25 meters)	125	642	5	4
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**
Operational Emissions				
On-Site Emissions (Area + Energy Sources)	0.21	1.07	0.02	0.02
SCAQMD Localized Screening Threshold (1 acres of disturbance at 25 meters)	103	522	1	1
Exceed SCAQMD Threshold?	**No**	**No**	**No**	**No**

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

Localized Operational Impacts

According to the SCAQMD localized significance threshold methodology, LSTs apply to on-site sources. LSTs for receptors located at 25 meters for SRA 16 were conservatively used in this analysis. The 1-acre LST threshold was used for the 0.69-acre project site. The operational emissions shown in Table 5 include all on-site project-related stationary sources (i.e., area and energy sources). The maximum daily emissions of these pollutants during operations would not result in significant concentrations of pollutants at nearby sensitive receptors. Therefore, significant impacts would not occur concerning LSTs during operational activities.

Carbon Monoxide Hot Spots

An analysis of CO "hot spots" is needed to determine whether the change in the level of service (LOS) of an intersection 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. An analysis prepared for CO attainment in the South Coast Air Basin by the SCAQMD can assist in evaluating the potential for CO exceedances. CO attainment was thoroughly analyzed as part of the SCAQMD's 2003 Air Quality Management Plan. The Basin was re-designated as attainment in 2007 and is no longer addressed in the SCAQMD's AQMP.

The 2003 Air Quality Management Plan is the most recent AQMP 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 an average daily traffic (ADT) volume of approximately 100,000 vehicles per day, was modeled for CO concentrations. This modeling effort identified a CO concentration high of 4.6 parts per million (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 2003 CO hot spot analysis. As the CO hotspots were not experienced at the Wilshire Boulevard/Veteran Avenue intersection even as it accommodates 100,000 vehicles daily, it can be reasonably inferred that CO hotspots would not be experienced at any vicinity intersections as the project would generate 57 daily vehicle trips. Therefore, impacts would be less than significant.

Greenhouse Gas Emissions Impacts

SCAQMD Thresholds

The City of Buena Park has not established screening threshold for GHGs. Therefore, the SCAQMD's proposed screening threshold of 3,000 metric tons of carbon dioxide equivalent per year ($MTCO_2e$/year) has been considered and used in this analysis.

Project GHG Emissions

The project would include direct and indirect greenhouse gas emissions from project construction and operations. Construction is considered a direct source since these emissions occur at the site. Direct operational-related GHG emissions for the proposed project would include emissions from area and mobile sources, while indirect emissions are from energy consumption, water demand, and solid waste.

Construction GHG Emissions

Construction of the project would result in direct emissions of carbon dioxide (CO_2), nitrous oxide (N_2O), and methane (CH_4) from construction equipment and the transport of materials and construction workers to and from the project site. Construction GHG emissions are typically summed and amortized over the lifetime of the project (assumed to be 30 years), then added to the operational emissions.[2] Total GHG emissions generated during all phases of construction were combined and are presented in Table 6: Construction Greenhouse Gas Emissions. The CalEEMod outputs are contained within Appendix A. As shown in Table 6, the project construction would result in 75 $MTCO_2e$ (approximately 2.5 $MTCO_2e$/year when amortized over 30 years).

Table 6: Construction Greenhouse Gas Emissions

Construction	**$MTCO_2e$ per Year**
Total Construction	75
Amortized over 30 Years	2.5

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

Operational GHG Emissions

Operational or long-term emissions occur over the life of the proposed project. GHG emissions would result from direct emissions such as project generated vehicular traffic, on-site combustion of natural gas, operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the project, the energy required to convey water to, 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. Table 7: Total Project Greenhouse Gas Emissions summarizes the total GHG emissions associated with proposed project. As shown in Table 7, the project would generate approximately 90.5 $MTCO_2e$/year. The project would not result in an increase in GHG emissions that exceed the SCAQMD's screening threshold of 3,000 $MTCO_2e$/year. Therefore, project related GHG emissions would be less than significant.

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

Table 7: Total Project Greenhouse Gas Emissions	
Emissions Source	**$MTCO_2e$ per Year**
Construction Amortized over 30 Years	2.5
Area Source	3
Energy	16
Mobile	63
Waste	3
Water	3
Total Project Emissions	**90.5**
SCAQMD Project Threshold	3,000
Threshold Exceeded?	**No**
Source: CalEEMod version 2020.4.0. Refer to Appendix A for model data outputs.	

GHG Plan Consistency

CARB's *2022 Scoping Plan for Achieving Carbon Neutrality* (2022 Scoping Plan), adopted December 15, 2022, sets a path to achieve targets for carbon neutrality and reduce anthropogenic GHG emissions by 85 percent below 1990 levels by 2045 in accordance with Assembly Bill (AB) 1279. The project would benefit from the State targets set forth within the 2022 Scoping Plan. As the proposed project's GHG emissions would be well below the SCAQMD 3,000 $MTCO_2e$/year threshold, the project would not interfere with the State's goals for reducing GHG emissions.

Approximately 87 percent of the project's emissions are from energy and mobile sources which would be further reduced by implementation of current State programs. It should be noted that the project and the City have no control over vehicle emissions (approximately 70 percent of the project's total emissions). However, these emissions would decline in the future due to statewide measures including the reduction in the carbon content of fuels, CARB's advanced clean car program, CARB's mobile source strategy, fuel efficiency standards, cleaner technology, and fleet turnover. Additionally, the Southern California Association of Government's (SCAG's) 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (Connect SoCal) is also expected to help California reach its GHG reduction goals, with reductions in per capita transportation emissions of 19 percent by 2035.[3] Accordingly, the project does not interfere with the State's efforts to reduce GHG emissions in 2030.

Project operations would benefit from the implementation of current and potential future energy regulations including the SB 100 renewable electricity portfolio target of 60 percent renewable energy by 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045.

[3] Southern California Association of Governments, *SB 375 Regional Plan Climate Targets*, https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plan-targets

Further, the proposed project is required to comply with all building codes in effect at the time of construction which include energy conservation measures mandated by Title 24 of the California Building Standards Code – Energy Efficiency Standards. Title 24 is part of the State's plans and regulations for reducing emissions of GHGs to meet and exceed AB 32 and SB 32 energy reduction goals. Because Title 24 standards require energy conservation features in new construction, they help reduce GHG emissions. Building Energy Efficiency Standards are updated on an approximately three-year cycle and the most recent 2019 standards took effect January 1, 2020. The Project would be required to comply with the latest applicable version of the code depending on when permit applications are applied for (i.e., permit applications on or after January 1, 2023, must comply with the 2022 Energy Code).

Conclusion

As discussed above, the proposed project would comply with the applicable State, Regional, and local goals and policies with regard to reducing GHG emissions. Therefore, the project would not conflict with an applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions, and a less than significant impact would occur. Furthermore, the project implementation would result in less than significant construction and operation air quality and GHG impacts. No mitigation measures would be required. Therefore, the proposed project would not result in significant effects.

Appendix A

Air Quality and GHG Data

Craig Apartments - Orange County, Winter

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

Craig Apartments

Orange County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse High Rise	12.00	Dwelling Unit	0.55	23,960.00	34
City Park	0.10	Acre	0.10	4,530.24	0
Other Asphalt Surfaces	1.59	1000sqft	0.04	1,593.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
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 - Based on site plan

Construction Phase - Per construction schedule

Grading -

Vehicle Trips - Per traffic study

Woodstoves - No wood burning fire place per SCAQMD rule

Construction Off-road Equipment Mitigation - SCAQMD rule compliance

Water Mitigation -

Craig Apartments - Orange County, Winter

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

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	31.00
tblConstructionPhase	NumDays	100.00	103.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	5.00	26.00
tblConstructionPhase	NumDays	1.00	15.00
tblConstructionPhase	PhaseEndDate	12/20/2023	3/31/2024
tblConstructionPhase	PhaseEndDate	12/6/2023	1/10/2024
tblConstructionPhase	PhaseEndDate	7/19/2023	8/18/2023
tblConstructionPhase	PhaseEndDate	12/13/2023	2/15/2024
tblConstructionPhase	PhaseEndDate	7/17/2023	7/21/2023
tblConstructionPhase	PhaseStartDate	12/14/2023	2/16/2024
tblConstructionPhase	PhaseStartDate	7/20/2023	8/19/2023
tblConstructionPhase	PhaseStartDate	7/18/2023	7/22/2023
tblConstructionPhase	PhaseStartDate	12/7/2023	1/11/2024
tblConstructionPhase	PhaseStartDate	7/15/2023	7/1/2023
tblFireplaces	NumberWood	0.60	0.00
tblGrading	MaterialExported	0.00	167.00
tblLandUse	LandUseSquareFeet	12,000.00	23,960.00
tblLandUse	LotAcreage	0.19	0.55
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	4.75
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	4.75
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	4.75

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

tblWoodstoves	NumberCatalytic	0.60	0.00
tblWoodstoves	NumberNoncatalytic	0.60	0.00

2.0 Emissions Summary

Craig Apartments - Orange County, Winter

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

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9602	10.3252	7.4408	0.0154	5.4206	0.4214	5.8420	2.5974	0.3877	2.9851	0.0000	1,505.5174	1,505.5174	0.4499	0.0125	1,520.4998
2024	5.0372	6.0665	7.5105	0.0128	0.2012	0.2833	0.4450	0.0534	0.2607	0.2970	0.0000	1,242.6020	1,242.6020	0.3619	7.8600e-003	1,253.9938
Maximum	**5.0372**	**10.3252**	**7.5105**	**0.0154**	**5.4206**	**0.4214**	**5.8420**	**2.5974**	**0.3877**	**2.9851**	**0.0000**	**1,505.5174**	**1,505.5174**	**0.4499**	**0.0125**	**1,520.4998**

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					
2023	0.9602	10.3252	7.4408	0.0154	2.3735	0.4214	2.7949	1.1255	0.3877	1.5132	0.0000	1,505.5174	1,505.5174	0.4499	0.0125	1,520.4998
2024	5.0372	6.0665	7.5105	0.0128	0.1907	0.2833	0.4345	0.0508	0.2607	0.2953	0.0000	1,242.6020	1,242.6020	0.3619	7.8600e-003	1,253.9938
Maximum	**5.0372**	**10.3252**	**7.5105**	**0.0154**	**2.3735**	**0.4214**	**2.7949**	**1.1255**	**0.3877**	**1.5132**	**0.0000**	**1,505.5174**	**1,505.5174**	**0.4499**	**0.0125**	**1,520.4998**

Craig Apartments - Orange County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.39	0.00	48.63	55.63	0.00	44.90	0.00	0.00	0.00	0.00	0.00	0.00

Craig Apartments - Orange County, Winter

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094
Energy	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Mobile	0.1536	0.1686	1.5501	3.6100e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		373.7888	373.7888	0.0227	0.0155	378.9665
Total	**0.7235**	**0.3830**	**2.6262**	**4.9600e-003**	**0.4104**	**0.0244**	**0.4348**	**0.1094**	**0.0242**	**0.1336**	**0.0000**	**634.6968**	**634.6968**	**0.0294**	**0.0202**	**641.4572**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094
Energy	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Mobile	0.1536	0.1686	1.5501	3.6100e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		373.7888	373.7888	0.0227	0.0155	378.9665
Total	**0.7235**	**0.3830**	**2.6262**	**4.9600e-003**	**0.4104**	**0.0244**	**0.4348**	**0.1094**	**0.0242**	**0.1336**	**0.0000**	**634.6968**	**634.6968**	**0.0294**	**0.0202**	**641.4572**

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

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2023	7/21/2023	5	15	
2	Grading	Grading	7/22/2023	8/18/2023	5	20	
3	Building Construction	Building Construction	8/19/2023	1/10/2024	5	103	
4	Paving	Paving	1/11/2024	2/15/2024	5	26	
5	Architectural Coating	Architectural Coating	2/16/2024	3/31/2024	5	31	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 15

Acres of Paving: 0.04

Residential Indoor: 48,519; Residential Outdoor: 16,173; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 96 (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
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Grading	Graders	1	6.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41

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

Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	21.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	11.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Replace Ground Cover

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

Clean Paved Roads

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

3.2 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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5348	6.1887	3.9239	9.7300e-003		0.2266	0.2266		0.2084	0.2084		942.4317	942.4317	0.3048		950.0517
Total	**0.5348**	**6.1887**	**3.9239**	**9.7300e-003**	**0.5303**	**0.2266**	**0.7568**	**0.0573**	**0.2084**	**0.2657**		**942.4317**	**942.4317**	**0.3048**		**950.0517**

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	0.0154	9.9000e-003	0.1426	4.5000e-004	0.0559	2.9000e-004	0.0562	0.0148	2.6000e-004	0.0151		45.9578	45.9578	1.0700e-003	1.1000e-003	46.3111
Total	**0.0154**	**9.9000e-003**	**0.1426**	**4.5000e-004**	**0.0559**	**2.9000e-004**	**0.0562**	**0.0148**	**2.6000e-004**	**0.0151**		**45.9578**	**45.9578**	**1.0700e-003**	**1.1000e-003**	**46.3111**

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

3.2 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	lb/day										lb/day					
Fugitive Dust					0.2267	0.0000	0.2267	0.0245	0.0000	0.0245			0.0000			0.0000
Off-Road	0.5348	6.1887	3.9239	9.7300e-003		0.2266	0.2266		0.2084	0.2084	0.0000	942.4317	942.4317	0.3048		950.0517
Total	**0.5348**	**6.1887**	**3.9239**	**9.7300e-003**	**0.2267**	**0.2266**	**0.4533**	**0.0245**	**0.2084**	**0.2329**	**0.0000**	**942.4317**	**942.4317**	**0.3048**		**950.0517**

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	0.0154	9.9000e-003	0.1426	4.5000e-004	0.0530	2.9000e-004	0.0533	0.0141	2.6000e-004	0.0144		45.9578	45.9578	1.0700e-003	1.1000e-003	46.3111
Total	**0.0154**	**9.9000e-003**	**0.1426**	**4.5000e-004**	**0.0530**	**2.9000e-004**	**0.0533**	**0.0141**	**2.6000e-004**	**0.0144**		**45.9578**	**45.9578**	**1.0700e-003**	**1.1000e-003**	**46.3111**

Craig Apartments - Orange County, Winter

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

3.3 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					5.3129	0.0000	5.3129	2.5687	0.0000	2.5687			0.0000			0.0000
Off-Road	0.9335	10.1789	5.5516	0.0141		0.4201	0.4201		0.3865	0.3865		1,364.7713	1,364.7713	0.4414		1,375.8062
Total	**0.9335**	**10.1789**	**5.5516**	**0.0141**	**5.3129**	**0.4201**	**5.7330**	**2.5687**	**0.3865**	**2.9552**		**1,364.7713**	**1,364.7713**	**0.4414**		**1,375.8062**

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	2.0600e-003	0.1305	0.0434	5.9000e-004	0.0183	8.1000e-004	0.0191	5.0100e-003	7.7000e-004	5.7900e-003		67.2135	67.2135	6.7700e-003	0.0108	70.5958
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	0.0246	0.0158	0.2282	7.2000e-004	0.0894	4.6000e-004	0.0899	0.0237	4.2000e-004	0.0241		73.5325	73.5325	1.7200e-003	1.7500e-003	74.0978
Total	**0.0267**	**0.1463**	**0.2716**	**1.3100e-003**	**0.1077**	**1.2700e-003**	**0.1090**	**0.0287**	**1.1900e-003**	**0.0299**		**140.7460**	**140.7460**	**8.4900e-003**	**0.0125**	**144.6936**

Craig Apartments - Orange County, Winter

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

3.3 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	lb/day										lb/day					
Fugitive Dust					2.2713	0.0000	2.2713	1.0981	0.0000	1.0981			0.0000			0.0000
Off-Road	0.9335	10.1789	5.5516	0.0141		0.4201	0.4201		0.3865	0.3865	0.0000	1,364.7713	1,364.7713	0.4414		1,375.8062
Total	**0.9335**	**10.1789**	**5.5516**	**0.0141**	**2.2713**	**0.4201**	**2.6914**	**1.0981**	**0.3865**	**1.4846**	**0.0000**	**1,364.7713**	**1,364.7713**	**0.4414**		**1,375.8062**

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	2.0600e-003	0.1305	0.0434	5.9000e-004	0.0175	8.1000e-004	0.0183	4.8100e-003	7.7000e-004	5.5800e-003		67.2135	67.2135	6.7700e-003	0.0108	70.5958
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	0.0246	0.0158	0.2282	7.2000e-004	0.0848	4.6000e-004	0.0852	0.0226	4.2000e-004	0.0230		73.5325	73.5325	1.7200e-003	1.7500e-003	74.0978
Total	**0.0267**	**0.1463**	**0.2716**	**1.3100e-003**	**0.1022**	**1.2700e-003**	**0.1035**	**0.0274**	**1.1900e-003**	**0.0286**		**140.7460**	**140.7460**	**8.4900e-003**	**0.0125**	**144.6936**

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

3.4 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	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946		1,104.6089	1,104.6089	0.3573		1,113.5402
Total	**0.6322**	**6.4186**	**7.0970**	**0.0114**		**0.3203**	**0.3203**		**0.2946**	**0.2946**		**1,104.6089**	**1,104.6089**	**0.3573**		**1,113.5402**

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	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.5000e-004	4.0300e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0339	0.0218	0.3138	9.9000e-004	0.1230	6.3000e-004	0.1236	0.0326	5.8000e-004	0.0332		101.1072	101.1072	2.3600e-003	2.4100e-003	101.8845
Total	**0.0358**	**0.0950**	**0.3438**	**1.3500e-003**	**0.1357**	**9.9000e-004**	**0.1367**	**0.0363**	**9.3000e-004**	**0.0372**		**140.6552**	**140.6552**	**4.7000e-003**	**8.0900e-003**	**143.1834**

Craig Apartments - Orange County, Winter

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

3.4 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	lb/day										lb/day					
Off-Road	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946	0.0000	1,104.6089	1,104.6089	0.3573		1,113.5402
Total	**0.6322**	**6.4186**	**7.0970**	**0.0114**		**0.3203**	**0.3203**		**0.2946**	**0.2946**	**0.0000**	**1,104.6089**	**1,104.6089**	**0.3573**		**1,113.5402**

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	1.9500e-003	0.0732	0.0300	3.6000e-004	0.0122	3.6000e-004	0.0126	3.5500e-003	3.5000e-004	3.8900e-003		39.5480	39.5480	2.3400e-003	5.6800e-003	41.2989
Worker	0.0339	0.0218	0.3138	9.9000e-004	0.1165	6.3000e-004	0.1172	0.0310	5.8000e-004	0.0316		101.1072	101.1072	2.3600e-003	2.4100e-003	101.8845
Total	**0.0358**	**0.0950**	**0.3438**	**1.3500e-003**	**0.1288**	**9.9000e-004**	**0.1298**	**0.0346**	**9.3000e-004**	**0.0355**		**140.6552**	**140.6552**	**4.7000e-003**	**8.0900e-003**	**143.1834**

Craig Apartments - Orange County, Winter

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

3.4 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	0.5950	5.9739	7.0675	0.0114		0.2824	0.2824		0.2598	0.2598		1,104.9834	1,104.9834	0.3574		1,113.9177
Total	**0.5950**	**5.9739**	**7.0675**	**0.0114**		**0.2824**	**0.2824**		**0.2598**	**0.2598**		**1,104.9834**	**1,104.9834**	**0.3574**		**1,113.9177**

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	1.9200e-003	0.0730	0.0298	3.5000e-004	0.0128	3.8000e-004	0.0132	3.6800e-003	3.6000e-004	4.0400e-003		38.9359	38.9359	2.3700e-003	5.6100e-003	40.6682
Worker	0.0320	0.0196	0.2928	9.6000e-004	0.1230	6.0000e-004	0.1236	0.0326	5.5000e-004	0.0332		98.6827	98.6827	2.1400e-003	2.2500e-003	99.4079
Total	**0.0339**	**0.0926**	**0.3225**	**1.3100e-003**	**0.1357**	**9.8000e-004**	**0.1367**	**0.0363**	**9.1000e-004**	**0.0372**		**137.6186**	**137.6186**	**4.5100e-003**	**7.8600e-003**	**140.0761**

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

3.4 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	lb/day										lb/day					
Off-Road	0.5950	5.9739	7.0675	0.0114		0.2824	0.2824		0.2598	0.2598	0.0000	1,104.9834	1,104.9834	0.3574		1,113.9177
Total	**0.5950**	**5.9739**	**7.0675**	**0.0114**		**0.2824**	**0.2824**		**0.2598**	**0.2598**	**0.0000**	**1,104.9834**	**1,104.9834**	**0.3574**		**1,113.9177**

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	1.9200e-003	0.0730	0.0298	3.5000e-004	0.0122	3.8000e-004	0.0126	3.5500e-003	3.6000e-004	3.9100e-003		38.9359	38.9359	2.3700e-003	5.6100e-003	40.6682
Worker	0.0320	0.0196	0.2928	9.6000e-004	0.1165	6.0000e-004	0.1171	0.0310	5.5000e-004	0.0316		98.6827	98.6827	2.1400e-003	2.2500e-003	99.4079
Total	**0.0339**	**0.0926**	**0.3225**	**1.3100e-003**	**0.1288**	**9.8000e-004**	**0.1298**	**0.0346**	**9.1000e-004**	**0.0355**		**137.6186**	**137.6186**	**4.5100e-003**	**7.8600e-003**	**140.0761**

Craig Apartments - Orange County, Winter

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

3.5 Paving - 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	0.5904	5.2297	7.0314	0.0113		0.2429	0.2429		0.2269	0.2269		1,036.2393	1,036.2393	0.3019		1,043.7858
Paving	4.0300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5944**	**5.2297**	**7.0314**	**0.0113**		**0.2429**	**0.2429**		**0.2269**	**0.2269**		**1,036.2393**	**1,036.2393**	**0.3019**		**1,043.7858**

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	0.0523	0.0320	0.4791	1.5700e-003	0.2012	9.8000e-004	0.2022	0.0534	9.0000e-004	0.0543		161.4808	161.4808	3.5100e-003	3.6900e-003	162.6674
Total	**0.0523**	**0.0320**	**0.4791**	**1.5700e-003**	**0.2012**	**9.8000e-004**	**0.2022**	**0.0534**	**9.0000e-004**	**0.0543**		**161.4808**	**161.4808**	**3.5100e-003**	**3.6900e-003**	**162.6674**

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

3.5 Paving - 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	lb/day										lb/day					
Off-Road	0.5904	5.2297	7.0314	0.0113		0.2429	0.2429		0.2269	0.2269	0.0000	1,036.2393	1,036.2393	0.3019		1,043.7858
Paving	4.0300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5944**	**5.2297**	**7.0314**	**0.0113**		**0.2429**	**0.2429**		**0.2269**	**0.2269**	**0.0000**	**1,036.2393**	**1,036.2393**	**0.3019**		**1,043.7858**

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	0.0523	0.0320	0.4791	1.5700e-003	0.1907	9.8000e-004	0.1917	0.0508	9.0000e-004	0.0517		161.4808	161.4808	3.5100e-003	3.6900e-003	162.6674
Total	**0.0523**	**0.0320**	**0.4791**	**1.5700e-003**	**0.1907**	**9.8000e-004**	**0.1917**	**0.0508**	**9.0000e-004**	**0.0517**		**161.4808**	**161.4808**	**3.5100e-003**	**3.6900e-003**	**162.6674**

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

3.6 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	4.8506					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	**5.0314**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	5.8100e-003	3.5600e-003	0.0532	1.7000e-004	0.0224	1.1000e-004	0.0225	5.9300e-003	1.0000e-004	6.0300e-003		17.9423	17.9423	3.9000e-004	4.1000e-004	18.0742
Total	**5.8100e-003**	**3.5600e-003**	**0.0532**	**1.7000e-004**	**0.0224**	**1.1000e-004**	**0.0225**	**5.9300e-003**	**1.0000e-004**	**6.0300e-003**		**17.9423**	**17.9423**	**3.9000e-004**	**4.1000e-004**	**18.0742**

Craig Apartments - Orange County, Winter

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

3.6 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	lb/day										lb/day					
Archit. Coating	4.8506					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	**5.0314**	**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**

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	5.8100e-003	3.5600e-003	0.0532	1.7000e-004	0.0212	1.1000e-004	0.0213	5.6400e-003	1.0000e-004	5.7400e-003		17.9423	17.9423	3.9000e-004	4.1000e-004	18.0742
Total	**5.8100e-003**	**3.5600e-003**	**0.0532**	**1.7000e-004**	**0.0212**	**1.1000e-004**	**0.0213**	**5.6400e-003**	**1.0000e-004**	**5.7400e-003**		**17.9423**	**17.9423**	**3.9000e-004**	**4.1000e-004**	**18.0742**

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1536	0.1686	1.5501	3.6100e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		373.7888	373.7888	0.0227	0.0155	378.9665
Unmitigated	0.1536	0.1686	1.5501	3.6100e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		373.7888	373.7888	0.0227	0.0155	378.9665

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	57.00	57.00	57.00	194,778	194,778
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	57.00	57.00	57.00	194,778	194,778

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869
Condo/Townhouse High Rise	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869
Other Asphalt Surfaces	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
NaturalGas Unmitigated	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	366.563	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Other 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
Total		**3.9500e-003**	**0.0338**	**0.0144**	**2.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.7300e-003**	**2.7300e-003**		**43.1250**	**43.1250**	**8.3000e-004**	**7.9000e-004**	**43.3813**

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	0.366563	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Other 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
Total		**3.9500e-003**	**0.0338**	**0.0144**	**2.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.7300e-003**	**2.7300e-003**		**43.1250**	**43.1250**	**8.3000e-004**	**7.9000e-004**	**43.3813**

6.0 Area Detail

6.1 Mitigation Measures Area

Craig Apartments - Orange County, Winter

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094
Unmitigated	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094

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	0.0412					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0198	0.1692	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	216.0000	216.0000	4.1400e-003	3.9600e-003	217.2836
Landscaping	0.0298	0.0114	0.9898	5.0000e-005		5.4900e-003	5.4900e-003		5.4900e-003	5.4900e-003		1.7830	1.7830	1.7100e-003		1.8258
Total	**0.5660**	**0.1806**	**1.0618**	**1.1300e-003**		**0.0192**	**0.0192**		**0.0192**	**0.0192**	**0.0000**	**217.7830**	**217.7830**	**5.8500e-003**	**3.9600e-003**	**219.1094**

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

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	0.0412					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0198	0.1692	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	216.0000	216.0000	4.1400e-003	3.9600e-003	217.2836
Landscaping	0.0298	0.0114	0.9898	5.0000e-005		5.4900e-003	5.4900e-003		5.4900e-003	5.4900e-003		1.7830	1.7830	1.7100e-003		1.8258
Total	**0.5660**	**0.1806**	**1.0618**	**1.1300e-003**		**0.0192**	**0.0192**		**0.0192**	**0.0192**	**0.0000**	**217.7830**	**217.7830**	**5.8500e-003**	**3.9600e-003**	**219.1094**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Craig Apartments - Orange County, Summer

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

Craig Apartments

Orange County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse High Rise	12.00	Dwelling Unit	0.55	23,960.00	34
City Park	0.10	Acre	0.10	4,530.24	0
Other Asphalt Surfaces	1.59	1000sqft	0.04	1,593.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
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 - Based on site plan

Construction Phase - Per construction schedule

Grading -

Vehicle Trips - Per traffic study

Woodstoves - No wood burning fire place per SCAQMD rule

Construction Off-road Equipment Mitigation - SCAQMD rule compliance

Water Mitigation -

Craig Apartments - Orange County, Summer

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

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	31.00
tblConstructionPhase	NumDays	100.00	103.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	5.00	26.00
tblConstructionPhase	NumDays	1.00	15.00
tblConstructionPhase	PhaseEndDate	12/20/2023	3/31/2024
tblConstructionPhase	PhaseEndDate	12/6/2023	1/10/2024
tblConstructionPhase	PhaseEndDate	7/19/2023	8/18/2023
tblConstructionPhase	PhaseEndDate	12/13/2023	2/15/2024
tblConstructionPhase	PhaseEndDate	7/17/2023	7/21/2023
tblConstructionPhase	PhaseStartDate	12/14/2023	2/16/2024
tblConstructionPhase	PhaseStartDate	7/20/2023	8/19/2023
tblConstructionPhase	PhaseStartDate	7/18/2023	7/22/2023
tblConstructionPhase	PhaseStartDate	12/7/2023	1/11/2024
tblConstructionPhase	PhaseStartDate	7/15/2023	7/1/2023
tblFireplaces	NumberWood	0.60	0.00
tblGrading	MaterialExported	0.00	167.00
tblLandUse	LandUseSquareFeet	12,000.00	23,960.00
tblLandUse	LotAcreage	0.19	0.55
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	4.75
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	4.75
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	4.75

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

tblWoodstoves	NumberCatalytic	0.60	0.00
tblWoodstoves	NumberNoncatalytic	0.60	0.00

2.0 Emissions Summary

Craig Apartments - Orange County, Summer

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

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2023	0.9583	10.3184	7.4629	0.0154	5.4206	0.4214	5.8420	2.5974	0.3877	2.9851	0.0000	1,509.1490	1,509.1490	0.4499	0.0124	1,524.0963
2024	5.0367	6.0616	7.5451	0.0129	0.2012	0.2833	0.4450	0.0534	0.2607	0.2970	0.0000	1,247.4904	1,247.4904	0.3618	7.7200e-003	1,258.8371
Maximum	**5.0367**	**10.3184**	**7.5451**	**0.0154**	**5.4206**	**0.4214**	**5.8420**	**2.5974**	**0.3877**	**2.9851**	**0.0000**	**1,509.1490**	**1,509.1490**	**0.4499**	**0.0124**	**1,524.0963**

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					
2023	0.9583	10.3184	7.4629	0.0154	2.3735	0.4214	2.7948	1.1255	0.3877	1.5132	0.0000	1,509.1490	1,509.1490	0.4499	0.0124	1,524.0963
2024	5.0367	6.0616	7.5451	0.0129	0.1907	0.2833	0.4345	0.0508	0.2607	0.2953	0.0000	1,247.4904	1,247.4904	0.3618	7.7200e-003	1,258.8371
Maximum	**5.0367**	**10.3184**	**7.5451**	**0.0154**	**2.3735**	**0.4214**	**2.7948**	**1.1255**	**0.3877**	**1.5132**	**0.0000**	**1,509.1490**	**1,509.1490**	**0.4499**	**0.0124**	**1,524.0963**

Craig Apartments - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.39	0.00	48.63	55.63	0.00	44.90	0.00	0.00	0.00	0.00	0.00	0.00

Craig Apartments - Orange County, Summer

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

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094
Energy	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Mobile	0.1545	0.1570	1.5692	3.7500e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		388.6379	388.6379	0.0220	0.0149	393.6149
Total	**0.7245**	**0.3714**	**2.6453**	**5.1000e-003**	**0.4104**	**0.0244**	**0.4348**	**0.1094**	**0.0242**	**0.1336**	**0.0000**	**649.5460**	**649.5460**	**0.0287**	**0.0196**	**656.1056**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094
Energy	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Mobile	0.1545	0.1570	1.5692	3.7500e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		388.6379	388.6379	0.0220	0.0149	393.6149
Total	**0.7245**	**0.3714**	**2.6453**	**5.1000e-003**	**0.4104**	**0.0244**	**0.4348**	**0.1094**	**0.0242**	**0.1336**	**0.0000**	**649.5460**	**649.5460**	**0.0287**	**0.0196**	**656.1056**

Craig Apartments - Orange County, Summer

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

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

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2023	7/21/2023	5	15	
2	Grading	Grading	7/22/2023	8/18/2023	5	20	
3	Building Construction	Building Construction	8/19/2023	1/10/2024	5	103	
4	Paving	Paving	1/11/2024	2/15/2024	5	26	
5	Architectural Coating	Architectural Coating	2/16/2024	3/31/2024	5	31	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 15

Acres of Paving: 0.04

Residential Indoor: 48,519; Residential Outdoor: 16,173; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 96 (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
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Grading	Graders	1	6.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41

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

Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	21.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	11.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	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

Craig Apartments - Orange County, Summer

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

3.2 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					0.5303	0.0000	0.5303	0.0573	0.0000	0.0573			0.0000			0.0000
Off-Road	0.5348	6.1887	3.9239	9.7300e-003		0.2266	0.2266		0.2084	0.2084		942.4317	942.4317	0.3048		950.0517
Total	**0.5348**	**6.1887**	**3.9239**	**9.7300e-003**	**0.5303**	**0.2266**	**0.7568**	**0.0573**	**0.2084**	**0.2657**		**942.4317**	**942.4317**	**0.3048**		**950.0517**

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	0.0141	9.0100e-003	0.1531	4.7000e-004	0.0559	2.9000e-004	0.0562	0.0148	2.6000e-004	0.0151		48.2655	48.2655	1.0500e-003	1.0300e-003	48.5986
Total	**0.0141**	**9.0100e-003**	**0.1531**	**4.7000e-004**	**0.0559**	**2.9000e-004**	**0.0562**	**0.0148**	**2.6000e-004**	**0.0151**		**48.2655**	**48.2655**	**1.0500e-003**	**1.0300e-003**	**48.5986**

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

3.2 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	lb/day										lb/day					
Fugitive Dust					0.2267	0.0000	0.2267	0.0245	0.0000	0.0245			0.0000			0.0000
Off-Road	0.5348	6.1887	3.9239	9.7300e-003		0.2266	0.2266		0.2084	0.2084	0.0000	942.4317	942.4317	0.3048		950.0517
Total	**0.5348**	**6.1887**	**3.9239**	**9.7300e-003**	**0.2267**	**0.2266**	**0.4533**	**0.0245**	**0.2084**	**0.2329**	**0.0000**	**942.4317**	**942.4317**	**0.3048**		**950.0517**

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	0.0141	9.0100e-003	0.1531	4.7000e-004	0.0530	2.9000e-004	0.0533	0.0141	2.6000e-004	0.0144		48.2655	48.2655	1.0500e-003	1.0300e-003	48.5986
Total	**0.0141**	**9.0100e-003**	**0.1531**	**4.7000e-004**	**0.0530**	**2.9000e-004**	**0.0533**	**0.0141**	**2.6000e-004**	**0.0144**		**48.2655**	**48.2655**	**1.0500e-003**	**1.0300e-003**	**48.5986**

Craig Apartments - Orange County, Summer

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

3.3 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					5.3129	0.0000	5.3129	2.5687	0.0000	2.5687			0.0000			0.0000
Off-Road	0.9335	10.1789	5.5516	0.0141		0.4201	0.4201		0.3865	0.3865		1,364.7713	1,364.7713	0.4414		1,375.8062
Total	**0.9335**	**10.1789**	**5.5516**	**0.0141**	**5.3129**	**0.4201**	**5.7330**	**2.5687**	**0.3865**	**2.9552**		**1,364.7713**	**1,364.7713**	**0.4414**		**1,375.8062**

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	2.1900e-003	0.1251	0.0429	5.9000e-004	0.0183	8.1000e-004	0.0191	5.0100e-003	7.7000e-004	5.7900e-003		67.1528	67.1528	6.7800e-003	0.0108	70.5323
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	0.0225	0.0144	0.2450	7.5000e-004	0.0894	4.6000e-004	0.0899	0.0237	4.2000e-004	0.0241		77.2248	77.2248	1.6800e-003	1.6500e-003	77.7578
Total	**0.0247**	**0.1396**	**0.2879**	**1.3400e-003**	**0.1077**	**1.2700e-003**	**0.1090**	**0.0287**	**1.1900e-003**	**0.0299**		**144.3777**	**144.3777**	**8.4600e-003**	**0.0124**	**148.2901**

Craig Apartments - Orange County, Summer

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

3.3 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	lb/day										lb/day					
Fugitive Dust					2.2713	0.0000	2.2713	1.0981	0.0000	1.0981			0.0000			0.0000
Off-Road	0.9335	10.1789	5.5516	0.0141		0.4201	0.4201		0.3865	0.3865	0.0000	1,364.7713	1,364.7713	0.4414		1,375.8062
Total	**0.9335**	**10.1789**	**5.5516**	**0.0141**	**2.2713**	**0.4201**	**2.6914**	**1.0981**	**0.3865**	**1.4846**	**0.0000**	**1,364.7713**	**1,364.7713**	**0.4414**		**1,375.8062**

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	2.1900e-003	0.1251	0.0429	5.9000e-004	0.0175	8.1000e-004	0.0183	4.8100e-003	7.7000e-004	5.5800e-003		67.1528	67.1528	6.7800e-003	0.0108	70.5323
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	0.0225	0.0144	0.2450	7.5000e-004	0.0848	4.6000e-004	0.0852	0.0226	4.2000e-004	0.0230		77.2248	77.2248	1.6800e-003	1.6500e-003	77.7578
Total	**0.0247**	**0.1396**	**0.2879**	**1.3400e-003**	**0.1022**	**1.2700e-003**	**0.1035**	**0.0274**	**1.1900e-003**	**0.0286**		**144.3777**	**144.3777**	**8.4600e-003**	**0.0124**	**148.2901**

Craig Apartments - Orange County, Summer

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

3.4 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	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946		1,104.6089	1,104.6089	0.3573		1,113.5402
Total	**0.6322**	**6.4186**	**7.0970**	**0.0114**		**0.3203**	**0.3203**		**0.2946**	**0.2946**		**1,104.6089**	**1,104.6089**	**0.3573**		**1,113.5402**

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	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0128	3.6000e-004	0.0132	3.6800e-003	3.4000e-004	4.0200e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0310	0.0198	0.3368	1.0400e-003	0.1230	6.3000e-004	0.1236	0.0326	5.8000e-004	0.0332		106.1842	106.1842	2.3000e-003	2.2700e-003	106.9169
Total	**0.0330**	**0.0899**	**0.3659**	**1.4000e-003**	**0.1357**	**9.9000e-004**	**0.1367**	**0.0363**	**9.2000e-004**	**0.0372**		**145.6740**	**145.6740**	**4.6500e-003**	**7.9400e-003**	**148.1540**

Craig Apartments - Orange County, Summer

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

3.4 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	lb/day										lb/day					
Off-Road	0.6322	6.4186	7.0970	0.0114		0.3203	0.3203		0.2946	0.2946	0.0000	1,104.6089	1,104.6089	0.3573		1,113.5402
Total	**0.6322**	**6.4186**	**7.0970**	**0.0114**		**0.3203**	**0.3203**		**0.2946**	**0.2946**	**0.0000**	**1,104.6089**	**1,104.6089**	**0.3573**		**1,113.5402**

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	2.0200e-003	0.0701	0.0291	3.6000e-004	0.0122	3.6000e-004	0.0126	3.5500e-003	3.4000e-004	3.8900e-003		39.4899	39.4899	2.3500e-003	5.6700e-003	41.2371
Worker	0.0310	0.0198	0.3368	1.0400e-003	0.1165	6.3000e-004	0.1172	0.0310	5.8000e-004	0.0316		106.1842	106.1842	2.3000e-003	2.2700e-003	106.9169
Total	**0.0330**	**0.0899**	**0.3659**	**1.4000e-003**	**0.1288**	**9.9000e-004**	**0.1298**	**0.0346**	**9.2000e-004**	**0.0355**		**145.6740**	**145.6740**	**4.6500e-003**	**7.9400e-003**	**148.1540**

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

3.4 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	0.5950	5.9739	7.0675	0.0114		0.2824	0.2824		0.2598	0.2598		1,104.9834	1,104.9834	0.3574		1,113.9177
Total	**0.5950**	**5.9739**	**7.0675**	**0.0114**		**0.2824**	**0.2824**		**0.2598**	**0.2598**		**1,104.9834**	**1,104.9834**	**0.3574**		**1,113.9177**

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	1.9900e-003	0.0699	0.0288	3.5000e-004	0.0128	3.8000e-004	0.0132	3.6800e-003	3.6000e-004	4.0400e-003		38.8773	38.8773	2.3700e-003	5.6000e-003	40.6060
Worker	0.0291	0.0178	0.3140	1.0000e-003	0.1230	6.0000e-004	0.1236	0.0326	5.5000e-004	0.0332		103.6297	103.6297	2.0900e-003	2.1200e-003	104.3133
Total	**0.0311**	**0.0877**	**0.3428**	**1.3500e-003**	**0.1357**	**9.8000e-004**	**0.1367**	**0.0363**	**9.1000e-004**	**0.0372**		**142.5070**	**142.5070**	**4.4600e-003**	**7.7200e-003**	**144.9193**

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

3.4 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	lb/day										lb/day					
Off-Road	0.5950	5.9739	7.0675	0.0114		0.2824	0.2824		0.2598	0.2598	0.0000	1,104.9834	1,104.9834	0.3574		1,113.9177
Total	**0.5950**	**5.9739**	**7.0675**	**0.0114**		**0.2824**	**0.2824**		**0.2598**	**0.2598**	**0.0000**	**1,104.9834**	**1,104.9834**	**0.3574**		**1,113.9177**

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	1.9900e-003	0.0699	0.0288	3.5000e-004	0.0122	3.8000e-004	0.0126	3.5500e-003	3.6000e-004	3.9100e-003		38.8773	38.8773	2.3700e-003	5.6000e-003	40.6060
Worker	0.0291	0.0178	0.3140	1.0000e-003	0.1165	6.0000e-004	0.1171	0.0310	5.5000e-004	0.0316		103.6297	103.6297	2.0900e-003	2.1200e-003	104.3133
Total	**0.0311**	**0.0877**	**0.3428**	**1.3500e-003**	**0.1288**	**9.8000e-004**	**0.1298**	**0.0346**	**9.1000e-004**	**0.0355**		**142.5070**	**142.5070**	**4.4600e-003**	**7.7200e-003**	**144.9193**

Craig Apartments - Orange County, Summer

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

3.5 Paving - 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	0.5904	5.2297	7.0314	0.0113		0.2429	0.2429		0.2269	0.2269		1,036.2393	1,036.2393	0.3019		1,043.7858
Paving	4.0300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5944**	**5.2297**	**7.0314**	**0.0113**		**0.2429**	**0.2429**		**0.2269**	**0.2269**		**1,036.2393**	**1,036.2393**	**0.3019**		**1,043.7858**

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	0.0477	0.0292	0.5137	1.6400e-003	0.2012	9.8000e-004	0.2022	0.0534	9.0000e-004	0.0543		169.5759	169.5759	3.4200e-003	3.4700e-003	170.6946
Total	**0.0477**	**0.0292**	**0.5137**	**1.6400e-003**	**0.2012**	**9.8000e-004**	**0.2022**	**0.0534**	**9.0000e-004**	**0.0543**		**169.5759**	**169.5759**	**3.4200e-003**	**3.4700e-003**	**170.6946**

Craig Apartments - Orange County, Summer

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

3.5 Paving - 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	lb/day										lb/day					
Off-Road	0.5904	5.2297	7.0314	0.0113		0.2429	0.2429		0.2269	0.2269	0.0000	1,036.2393	1,036.2393	0.3019		1,043.7858
Paving	4.0300e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5944**	**5.2297**	**7.0314**	**0.0113**		**0.2429**	**0.2429**		**0.2269**	**0.2269**	**0.0000**	**1,036.2393**	**1,036.2393**	**0.3019**		**1,043.7858**

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	0.0477	0.0292	0.5137	1.6400e-003	0.1907	9.8000e-004	0.1917	0.0508	9.0000e-004	0.0517		169.5759	169.5759	3.4200e-003	3.4700e-003	170.6946
Total	**0.0477**	**0.0292**	**0.5137**	**1.6400e-003**	**0.1907**	**9.8000e-004**	**0.1917**	**0.0508**	**9.0000e-004**	**0.0517**		**169.5759**	**169.5759**	**3.4200e-003**	**3.4700e-003**	**170.6946**

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

3.6 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	4.8506					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	**5.0314**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

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	5.3000e-003	3.2400e-003	0.0571	1.8000e-004	0.0224	1.1000e-004	0.0225	5.9300e-003	1.0000e-004	6.0300e-003		18.8418	18.8418	3.8000e-004	3.9000e-004	18.9661
Total	**5.3000e-003**	**3.2400e-003**	**0.0571**	**1.8000e-004**	**0.0224**	**1.1000e-004**	**0.0225**	**5.9300e-003**	**1.0000e-004**	**6.0300e-003**		**18.8418**	**18.8418**	**3.8000e-004**	**3.9000e-004**	**18.9661**

Craig Apartments - Orange County, Summer

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

3.6 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	lb/day										lb/day					
Archit. Coating	4.8506					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	**5.0314**	**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**

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	5.3000e-003	3.2400e-003	0.0571	1.8000e-004	0.0212	1.1000e-004	0.0213	5.6400e-003	1.0000e-004	5.7400e-003		18.8418	18.8418	3.8000e-004	3.9000e-004	18.9661
Total	**5.3000e-003**	**3.2400e-003**	**0.0571**	**1.8000e-004**	**0.0212**	**1.1000e-004**	**0.0213**	**5.6400e-003**	**1.0000e-004**	**5.7400e-003**		**18.8418**	**18.8418**	**3.8000e-004**	**3.9000e-004**	**18.9661**

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

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.1545	0.1570	1.5692	3.7500e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		388.6379	388.6379	0.0220	0.0149	393.6149
Unmitigated	0.1545	0.1570	1.5692	3.7500e-003	0.4104	2.5100e-003	0.4129	0.1094	2.3300e-003	0.1117		388.6379	388.6379	0.0220	0.0149	393.6149

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	57.00	57.00	57.00	194,778	194,778
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	57.00	57.00	57.00	194,778	194,778

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

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

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869
Condo/Townhouse High Rise	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869
Other Asphalt Surfaces	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
NaturalGas Unmitigated	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813

Craig Apartments - Orange County, Summer

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	366.563	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Other 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
Total		**3.9500e-003**	**0.0338**	**0.0144**	**2.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.7300e-003**	**2.7300e-003**		**43.1250**	**43.1250**	**8.3000e-004**	**7.9000e-004**	**43.3813**

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	0.366563	3.9500e-003	0.0338	0.0144	2.2000e-004		2.7300e-003	2.7300e-003		2.7300e-003	2.7300e-003		43.1250	43.1250	8.3000e-004	7.9000e-004	43.3813
Other 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
Total		**3.9500e-003**	**0.0338**	**0.0144**	**2.2000e-004**		**2.7300e-003**	**2.7300e-003**		**2.7300e-003**	**2.7300e-003**		**43.1250**	**43.1250**	**8.3000e-004**	**7.9000e-004**	**43.3813**

6.0 Area Detail

6.1 Mitigation Measures Area

Craig Apartments - Orange County, Summer

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094
Unmitigated	0.5660	0.1806	1.0618	1.1300e-003		0.0192	0.0192		0.0192	0.0192	0.0000	217.7830	217.7830	5.8500e-003	3.9600e-003	219.1094

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	0.0412					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0198	0.1692	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	216.0000	216.0000	4.1400e-003	3.9600e-003	217.2836
Landscaping	0.0298	0.0114	0.9898	5.0000e-005		5.4900e-003	5.4900e-003		5.4900e-003	5.4900e-003		1.7830	1.7830	1.7100e-003		1.8258
Total	**0.5660**	**0.1806**	**1.0618**	**1.1300e-003**		**0.0192**	**0.0192**		**0.0192**	**0.0192**	**0.0000**	**217.7830**	**217.7830**	**5.8500e-003**	**3.9600e-003**	**219.1094**

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

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	0.0412					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.4752					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0198	0.1692	0.0720	1.0800e-003		0.0137	0.0137		0.0137	0.0137	0.0000	216.0000	216.0000	4.1400e-003	3.9600e-003	217.2836
Landscaping	0.0298	0.0114	0.9898	5.0000e-005		5.4900e-003	5.4900e-003		5.4900e-003	5.4900e-003		1.7830	1.7830	1.7100e-003		1.8258
Total	**0.5660**	**0.1806**	**1.0618**	**1.1300e-003**		**0.0192**	**0.0192**		**0.0192**	**0.0192**	**0.0000**	**217.7830**	**217.7830**	**5.8500e-003**	**3.9600e-003**	**219.1094**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

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

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Craig Apartments - Orange County, Annual

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

Craig Apartments

Orange County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Condo/Townhouse High Rise	12.00	Dwelling Unit	0.55	23,960.00	34
City Park	0.10	Acre	0.10	4,530.24	0
Other Asphalt Surfaces	1.59	1000sqft	0.04	1,593.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	30
Climate Zone	8			**Operational Year**	2024
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 - Based on site plan

Construction Phase - Per construction schedule

Grading -

Vehicle Trips - Per traffic study

Woodstoves - No wood burning fire place per SCAQMD rule

Construction Off-road Equipment Mitigation - SCAQMD rule compliance

Water Mitigation -

Craig Apartments - Orange County, Annual

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

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	CleanPavedRoadPercentReduction	0	6
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	12
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	5.00	31.00
tblConstructionPhase	NumDays	100.00	103.00
tblConstructionPhase	NumDays	2.00	20.00
tblConstructionPhase	NumDays	5.00	26.00
tblConstructionPhase	NumDays	1.00	15.00
tblConstructionPhase	PhaseEndDate	12/20/2023	3/31/2024
tblConstructionPhase	PhaseEndDate	12/6/2023	1/10/2024
tblConstructionPhase	PhaseEndDate	7/19/2023	8/18/2023
tblConstructionPhase	PhaseEndDate	12/13/2023	2/15/2024
tblConstructionPhase	PhaseEndDate	7/17/2023	7/21/2023
tblConstructionPhase	PhaseStartDate	12/14/2023	2/16/2024
tblConstructionPhase	PhaseStartDate	7/20/2023	8/19/2023
tblConstructionPhase	PhaseStartDate	7/18/2023	7/22/2023
tblConstructionPhase	PhaseStartDate	12/7/2023	1/11/2024
tblConstructionPhase	PhaseStartDate	7/15/2023	7/1/2023
tblFireplaces	NumberWood	0.60	0.00
tblGrading	MaterialExported	0.00	167.00
tblLandUse	LandUseSquareFeet	12,000.00	23,960.00
tblLandUse	LotAcreage	0.19	0.55
tblVehicleTrips	ST_TR	1.96	0.00
tblVehicleTrips	ST_TR	4.91	4.75
tblVehicleTrips	SU_TR	2.19	0.00
tblVehicleTrips	SU_TR	4.09	4.75
tblVehicleTrips	WD_TR	0.78	0.00
tblVehicleTrips	WD_TR	5.44	4.75

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

tblWoodstoves	NumberCatalytic	0.60	0.00
tblWoodstoves	NumberNoncatalytic	0.60	0.00

2.0 Emissions Summary

Craig Apartments - Orange County, Annual

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

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2023	0.0453	0.4592	0.4426	8.4000e-004	0.0649	0.0212	0.0861	0.0282	0.0195	0.0477	0.0000	74.1133	74.1133	0.0218	4.7000e-004	74.7977
2024	0.0889	0.1116	0.1563	2.7000e-004	3.4400e-003	5.2500e-003	8.6900e-003	9.2000e-004	4.9500e-003	5.8600e-003	0.0000	22.8780	22.8780	5.1400e-003	8.0000e-005	23.0300
Maximum	**0.0889**	**0.4592**	**0.4426**	**8.4000e-004**	**0.0649**	**0.0212**	**0.0861**	**0.0282**	**0.0195**	**0.0477**	**0.0000**	**74.1133**	**74.1133**	**0.0218**	**4.7000e-004**	**74.7977**

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					
2023	0.0453	0.4592	0.4426	8.4000e-004	0.0318	0.0212	0.0530	0.0132	0.0195	0.0326	0.0000	74.1132	74.1132	0.0218	4.7000e-004	74.7976
2024	0.0889	0.1116	0.1563	2.7000e-004	3.2600e-003	5.2500e-003	8.5100e-003	8.7000e-004	4.9500e-003	5.8200e-003	0.0000	22.8780	22.8780	5.1400e-003	8.0000e-005	23.0300
Maximum	**0.0889**	**0.4592**	**0.4426**	**8.4000e-004**	**0.0318**	**0.0212**	**0.0530**	**0.0132**	**0.0195**	**0.0326**	**0.0000**	**74.1132**	**74.1132**	**0.0218**	**4.7000e-004**	**74.7976**

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**48.68**	**0.00**	**35.11**	**51.85**	**0.00**	**28.18**	**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	**7-1-2023**	**9-30-2023**	0.2735	0.2735
2	**10-1-2023**	**12-31-2023**	0.2360	0.2360
3	**1-1-2024**	**3-31-2024**	0.2005	0.2005
		Highest	0.2735	0.2735

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0982	3.5400e-003	0.1246	2.0000e-005		8.6000e-004	8.6000e-004		8.6000e-004	8.6000e-004	0.0000	2.6516	2.6516	2.4000e-004	4.0000e-005	2.6710
Energy	7.2000e-004	6.1700e-003	2.6200e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	15.8514	15.8514	8.7000e-004	2.2000e-004	15.9388
Mobile	0.0274	0.0311	0.2840	6.6000e-004	0.0734	4.6000e-004	0.0738	0.0196	4.2000e-004	0.0200	0.0000	62.3034	62.3034	3.7200e-003	2.5700e-003	63.1621
Waste						0.0000	0.0000		0.0000	0.0000	1.1225	0.0000	1.1225	0.0663	0.0000	2.7811
Water						0.0000	0.0000		0.0000	0.0000	0.2480	3.0114	3.2594	0.0257	6.3000e-004	4.0912
Total	**0.1263**	**0.0408**	**0.4113**	**7.2000e-004**	**0.0734**	**1.8200e-003**	**0.0752**	**0.0196**	**1.7800e-003**	**0.0214**	**1.3706**	**83.8178**	**85.1884**	**0.0969**	**3.4600e-003**	**88.6440**

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

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0982	3.5400e-003	0.1246	2.0000e-005		8.6000e-004	8.6000e-004		8.6000e-004	8.6000e-004	0.0000	2.6516	2.6516	2.4000e-004	4.0000e-005	2.6710
Energy	7.2000e-004	6.1700e-003	2.6200e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	15.8514	15.8514	8.7000e-004	2.2000e-004	15.9388
Mobile	0.0274	0.0311	0.2840	6.6000e-004	0.0734	4.6000e-004	0.0738	0.0196	4.2000e-004	0.0200	0.0000	62.3034	62.3034	3.7200e-003	2.5700e-003	63.1621
Waste						0.0000	0.0000		0.0000	0.0000	1.1225	0.0000	1.1225	0.0663	0.0000	2.7811
Water						0.0000	0.0000		0.0000	0.0000	0.1984	2.5767	2.7752	0.0206	5.1000e-004	3.4414
Total	**0.1263**	**0.0408**	**0.4113**	**7.2000e-004**	**0.0734**	**1.8200e-003**	**0.0752**	**0.0196**	**1.7800e-003**	**0.0214**	**1.3210**	**83.3831**	**84.7041**	**0.0918**	**3.3400e-003**	**87.9943**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.62**	**0.52**	**0.57**	**5.29**	**3.47**	**0.73**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	7/1/2023	7/21/2023	5	15	
2	Grading	Grading	7/22/2023	8/18/2023	5	20	
3	Building Construction	Building Construction	8/19/2023	1/10/2024	5	103	

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

4	Paving	Paving	1/11/2024	2/15/2024	5	26	
5	Architectural Coating	Architectural Coating	2/16/2024	3/31/2024	5	31	

Acres of Grading (Site Preparation Phase): 7.5

Acres of Grading (Grading Phase): 15

Acres of Paving: 0.04

Residential Indoor: 48,519; Residential Outdoor: 16,173; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 96 (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
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Grading	Graders	1	6.00	187	0.41
Site Preparation	Graders	1	8.00	187	0.41
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37

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
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

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

Grading	3	8.00	0.00	21.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	11.00	2.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	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 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					3.9800e-003	0.0000	3.9800e-003	4.3000e-004	0.0000	4.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0100e-003	0.0464	0.0294	7.0000e-005		1.7000e-003	1.7000e-003		1.5600e-003	1.5600e-003	0.0000	6.4122	6.4122	2.0700e-003	0.0000	6.4640
Total	**4.0100e-003**	**0.0464**	**0.0294**	**7.0000e-005**	**3.9800e-003**	**1.7000e-003**	**5.6800e-003**	**4.3000e-004**	**1.5600e-003**	**1.9900e-003**	**0.0000**	**6.4122**	**6.4122**	**2.0700e-003**	**0.0000**	**6.4640**

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

3.2 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	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	1.1000e-004	8.0000e-005	1.0900e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3169	0.3169	1.0000e-005	1.0000e-005	0.3194
Total	**1.1000e-004**	**8.0000e-005**	**1.0900e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3169**	**0.3169**	**1.0000e-005**	**1.0000e-005**	**0.3194**

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					1.7000e-003	0.0000	1.7000e-003	1.8000e-004	0.0000	1.8000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.0100e-003	0.0464	0.0294	7.0000e-005		1.7000e-003	1.7000e-003		1.5600e-003	1.5600e-003	0.0000	6.4122	6.4122	2.0700e-003	0.0000	6.4640
Total	**4.0100e-003**	**0.0464**	**0.0294**	**7.0000e-005**	**1.7000e-003**	**1.7000e-003**	**3.4000e-003**	**1.8000e-004**	**1.5600e-003**	**1.7400e-003**	**0.0000**	**6.4122**	**6.4122**	**2.0700e-003**	**0.0000**	**6.4640**

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

3.2 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	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	1.1000e-004	8.0000e-005	1.0900e-003	0.0000	3.9000e-004	0.0000	3.9000e-004	1.0000e-004	0.0000	1.1000e-004	0.0000	0.3169	0.3169	1.0000e-005	1.0000e-005	0.3194
Total	**1.1000e-004**	**8.0000e-005**	**1.0900e-003**	**0.0000**	**3.9000e-004**	**0.0000**	**3.9000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3169**	**0.3169**	**1.0000e-005**	**1.0000e-005**	**0.3194**

3.3 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					0.0531	0.0000	0.0531	0.0257	0.0000	0.0257	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.3400e-003	0.1018	0.0555	1.4000e-004		4.2000e-003	4.2000e-003		3.8600e-003	3.8600e-003	0.0000	12.3810	12.3810	4.0000e-003	0.0000	12.4811
Total	**9.3400e-003**	**0.1018**	**0.0555**	**1.4000e-004**	**0.0531**	**4.2000e-003**	**0.0573**	**0.0257**	**3.8600e-003**	**0.0296**	**0.0000**	**12.3810**	**12.3810**	**4.0000e-003**	**0.0000**	**12.4811**

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

3.3 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	tons/yr										MT/yr					
Hauling	2.0000e-005	1.3200e-003	4.3000e-004	1.0000e-005	1.8000e-004	1.0000e-005	1.9000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.6094	0.6094	6.0000e-005	1.0000e-004	0.6401
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	2.3000e-004	1.6000e-004	2.3300e-003	1.0000e-005	8.8000e-004	0.0000	8.8000e-004	2.3000e-004	0.0000	2.4000e-004	0.0000	0.6761	0.6761	2.0000e-005	2.0000e-005	0.6813
Total	**2.5000e-004**	**1.4800e-003**	**2.7600e-003**	**2.0000e-005**	**1.0600e-003**	**1.0000e-005**	**1.0700e-003**	**2.8000e-004**	**1.0000e-005**	**3.0000e-004**	**0.0000**	**1.2855**	**1.2855**	**8.0000e-005**	**1.2000e-004**	**1.3214**

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					0.0227	0.0000	0.0227	0.0110	0.0000	0.0110	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.3400e-003	0.1018	0.0555	1.4000e-004		4.2000e-003	4.2000e-003		3.8600e-003	3.8600e-003	0.0000	12.3810	12.3810	4.0000e-003	0.0000	12.4811
Total	**9.3400e-003**	**0.1018**	**0.0555**	**1.4000e-004**	**0.0227**	**4.2000e-003**	**0.0269**	**0.0110**	**3.8600e-003**	**0.0148**	**0.0000**	**12.3810**	**12.3810**	**4.0000e-003**	**0.0000**	**12.4811**

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

3.3 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	tons/yr										MT/yr					
Hauling	2.0000e-005	1.3200e-003	4.3000e-004	1.0000e-005	1.7000e-004	1.0000e-005	1.8000e-004	5.0000e-005	1.0000e-005	6.0000e-005	0.0000	0.6094	0.6094	6.0000e-005	1.0000e-004	0.6401
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	2.3000e-004	1.6000e-004	2.3300e-003	1.0000e-005	8.3000e-004	0.0000	8.4000e-004	2.2000e-004	0.0000	2.3000e-004	0.0000	0.6761	0.6761	2.0000e-005	2.0000e-005	0.6813
Total	**2.5000e-004**	**1.4800e-003**	**2.7600e-003**	**2.0000e-005**	**1.0000e-003**	**1.0000e-005**	**1.0200e-003**	**2.7000e-004**	**1.0000e-005**	**2.9000e-004**	**0.0000**	**1.2855**	**1.2855**	**8.0000e-005**	**1.2000e-004**	**1.3214**

3.4 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	0.0300	0.3049	0.3371	5.4000e-004		0.0152	0.0152		0.0140	0.0140	0.0000	47.5990	47.5990	0.0154	0.0000	47.9839
Total	**0.0300**	**0.3049**	**0.3371**	**5.4000e-004**		**0.0152**	**0.0152**		**0.0140**	**0.0140**	**0.0000**	**47.5990**	**47.5990**	**0.0154**	**0.0000**	**47.9839**

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

3.4 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	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	9.0000e-005	3.4900e-003	1.4000e-003	2.0000e-005	6.0000e-004	2.0000e-005	6.2000e-004	1.7000e-004	2.0000e-005	1.9000e-004	0.0000	1.7027	1.7027	1.0000e-004	2.4000e-004	1.7781
Worker	1.4800e-003	1.0600e-003	0.0152	5.0000e-005	5.7400e-003	3.0000e-005	5.7700e-003	1.5200e-003	3.0000e-005	1.5500e-003	0.0000	4.4159	4.4159	1.0000e-004	1.1000e-004	4.4498
Total	**1.5700e-003**	**4.5500e-003**	**0.0166**	**7.0000e-005**	**6.3400e-003**	**5.0000e-005**	**6.3900e-003**	**1.6900e-003**	**5.0000e-005**	**1.7400e-003**	**0.0000**	**6.1186**	**6.1186**	**2.0000e-004**	**3.5000e-004**	**6.2279**

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	0.0300	0.3049	0.3371	5.4000e-004		0.0152	0.0152		0.0140	0.0140	0.0000	47.5990	47.5990	0.0154	0.0000	47.9838
Total	**0.0300**	**0.3049**	**0.3371**	**5.4000e-004**		**0.0152**	**0.0152**		**0.0140**	**0.0140**	**0.0000**	**47.5990**	**47.5990**	**0.0154**	**0.0000**	**47.9838**

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

3.4 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	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	9.0000e-005	3.4900e-003	1.4000e-003	2.0000e-005	5.7000e-004	2.0000e-005	5.9000e-004	1.7000e-004	2.0000e-005	1.8000e-004	0.0000	1.7027	1.7027	1.0000e-004	2.4000e-004	1.7781
Worker	1.4800e-003	1.0600e-003	0.0152	5.0000e-005	5.4400e-003	3.0000e-005	5.4700e-003	1.4500e-003	3.0000e-005	1.4800e-003	0.0000	4.4159	4.4159	1.0000e-004	1.1000e-004	4.4498
Total	**1.5700e-003**	**4.5500e-003**	**0.0166**	**7.0000e-005**	**6.0100e-003**	**5.0000e-005**	**6.0600e-003**	**1.6200e-003**	**5.0000e-005**	**1.6600e-003**	**0.0000**	**6.1186**	**6.1186**	**2.0000e-004**	**3.5000e-004**	**6.2279**

3.4 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	2.3800e-003	0.0239	0.0283	5.0000e-005		1.1300e-003	1.1300e-003		1.0400e-003	1.0400e-003	0.0000	4.0097	4.0097	1.3000e-003	0.0000	4.0421
Total	**2.3800e-003**	**0.0239**	**0.0283**	**5.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.0400e-003**	**1.0400e-003**	**0.0000**	**4.0097**	**4.0097**	**1.3000e-003**	**0.0000**	**4.0421**

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

3.4 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.9000e-004	1.2000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1412	0.1412	1.0000e-005	2.0000e-005	0.1475
Worker	1.2000e-004	8.0000e-005	1.2000e-003	0.0000	4.8000e-004	0.0000	4.9000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.3629	0.3629	1.0000e-005	1.0000e-005	0.3656
Total	**1.3000e-004**	**3.7000e-004**	**1.3200e-003**	**0.0000**	**5.3000e-004**	**0.0000**	**5.4000e-004**	**1.4000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.5041**	**0.5041**	**2.0000e-005**	**3.0000e-005**	**0.5131**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.3800e-003	0.0239	0.0283	5.0000e-005		1.1300e-003	1.1300e-003		1.0400e-003	1.0400e-003	0.0000	4.0097	4.0097	1.3000e-003	0.0000	4.0421
Total	**2.3800e-003**	**0.0239**	**0.0283**	**5.0000e-005**		**1.1300e-003**	**1.1300e-003**		**1.0400e-003**	**1.0400e-003**	**0.0000**	**4.0097**	**4.0097**	**1.3000e-003**	**0.0000**	**4.0421**

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

3.4 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	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.0000e-005	2.9000e-004	1.2000e-004	0.0000	5.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1412	0.1412	1.0000e-005	2.0000e-005	0.1475
Worker	1.2000e-004	8.0000e-005	1.2000e-003	0.0000	4.6000e-004	0.0000	4.6000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3629	0.3629	1.0000e-005	1.0000e-005	0.3656
Total	**1.3000e-004**	**3.7000e-004**	**1.3200e-003**	**0.0000**	**5.1000e-004**	**0.0000**	**5.1000e-004**	**1.3000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.5041**	**0.5041**	**2.0000e-005**	**3.0000e-005**	**0.5131**

3.5 Paving - 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	7.6700e-003	0.0680	0.0914	1.5000e-004		3.1600e-003	3.1600e-003		2.9500e-003	2.9500e-003	0.0000	12.2208	12.2208	3.5600e-003	0.0000	12.3098
Paving	5.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.7200e-003**	**0.0680**	**0.0914**	**1.5000e-004**		**3.1600e-003**	**3.1600e-003**		**2.9500e-003**	**2.9500e-003**	**0.0000**	**12.2208**	**12.2208**	**3.5600e-003**	**0.0000**	**12.3098**

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

3.5 Paving - 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	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	6.2000e-004	4.2000e-004	6.3700e-003	2.0000e-005	2.5700e-003	1.0000e-005	2.5800e-003	6.8000e-004	1.0000e-005	6.9000e-004	0.0000	1.9302	1.9302	4.0000e-005	4.0000e-005	1.9443
Total	**6.2000e-004**	**4.2000e-004**	**6.3700e-003**	**2.0000e-005**	**2.5700e-003**	**1.0000e-005**	**2.5800e-003**	**6.8000e-004**	**1.0000e-005**	**6.9000e-004**	**0.0000**	**1.9302**	**1.9302**	**4.0000e-005**	**4.0000e-005**	**1.9443**

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	7.6700e-003	0.0680	0.0914	1.5000e-004		3.1600e-003	3.1600e-003		2.9500e-003	2.9500e-003	0.0000	12.2208	12.2208	3.5600e-003	0.0000	12.3098
Paving	5.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**7.7200e-003**	**0.0680**	**0.0914**	**1.5000e-004**		**3.1600e-003**	**3.1600e-003**		**2.9500e-003**	**2.9500e-003**	**0.0000**	**12.2208**	**12.2208**	**3.5600e-003**	**0.0000**	**12.3098**

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

3.5 Paving - 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	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	6.2000e-004	4.2000e-004	6.3700e-003	2.0000e-005	2.4400e-003	1.0000e-005	2.4500e-003	6.5000e-004	1.0000e-005	6.6000e-004	0.0000	1.9302	1.9302	4.0000e-005	4.0000e-005	1.9443
Total	**6.2000e-004**	**4.2000e-004**	**6.3700e-003**	**2.0000e-005**	**2.4400e-003**	**1.0000e-005**	**2.4500e-003**	**6.5000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**1.9302**	**1.9302**	**4.0000e-005**	**4.0000e-005**	**1.9443**

3.6 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	0.0752					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8000e-003	0.0189	0.0281	5.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	3.9575	3.9575	2.2000e-004	0.0000	3.9631
Total	**0.0780**	**0.0189**	**0.0281**	**5.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**3.9575**	**3.9575**	**2.2000e-004**	**0.0000**	**3.9631**

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

3.6 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	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	8.0000e-005	6.0000e-005	8.4000e-004	0.0000	3.4000e-004	0.0000	3.4000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2557	0.2557	1.0000e-005	1.0000e-005	0.2576
Total	**8.0000e-005**	**6.0000e-005**	**8.4000e-004**	**0.0000**	**3.4000e-004**	**0.0000**	**3.4000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2557**	**0.2557**	**1.0000e-005**	**1.0000e-005**	**0.2576**

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	0.0752					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.8000e-003	0.0189	0.0281	5.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	3.9575	3.9575	2.2000e-004	0.0000	3.9631
Total	**0.0780**	**0.0189**	**0.0281**	**5.0000e-005**		**9.4000e-004**	**9.4000e-004**		**9.4000e-004**	**9.4000e-004**	**0.0000**	**3.9575**	**3.9575**	**2.2000e-004**	**0.0000**	**3.9631**

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

3.6 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	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	8.0000e-005	6.0000e-005	8.4000e-004	0.0000	3.2000e-004	0.0000	3.2000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2557	0.2557	1.0000e-005	1.0000e-005	0.2576
Total	**8.0000e-005**	**6.0000e-005**	**8.4000e-004**	**0.0000**	**3.2000e-004**	**0.0000**	**3.2000e-004**	**9.0000e-005**	**0.0000**	**9.0000e-005**	**0.0000**	**0.2557**	**0.2557**	**1.0000e-005**	**1.0000e-005**	**0.2576**

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 Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0274	0.0311	0.2840	6.6000e-004	0.0734	4.6000e-004	0.0738	0.0196	4.2000e-004	0.0200	0.0000	62.3034	62.3034	3.7200e-003	2.5700e-003	63.1621
Unmitigated	0.0274	0.0311	0.2840	6.6000e-004	0.0734	4.6000e-004	0.0738	0.0196	4.2000e-004	0.0200	0.0000	62.3034	62.3034	3.7200e-003	2.5700e-003	63.1621

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Condo/Townhouse High Rise	57.00	57.00	57.00	194,778	194,778
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	57.00	57.00	57.00	194,778	194,778

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Condo/Townhouse High Rise	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3
Other Asphalt Surfaces	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
City Park	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869
Condo/Townhouse High Rise	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869

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

Other Asphalt Surfaces	0.546200	0.059546	0.185910	0.127866	0.024295	0.006605	0.014499	0.004906	0.000657	0.000381	0.024552	0.000713	0.003869

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	8.7116	8.7116	7.4000e-004	9.0000e-005	8.7565
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	8.7116	8.7116	7.4000e-004	9.0000e-005	8.7565
NaturalGas Mitigated	7.2000e-004	6.1700e-003	2.6200e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.1398	7.1398	1.4000e-004	1.3000e-004	7.1823
NaturalGas Unmitigated	7.2000e-004	6.1700e-003	2.6200e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.1398	7.1398	1.4000e-004	1.3000e-004	7.1823

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	133795	7.2000e-004	6.1700e-003	2.6200e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.1398	7.1398	1.4000e-004	1.3000e-004	7.1823
Other 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
Total		**7.2000e-004**	**6.1700e-003**	**2.6200e-003**	**4.0000e-005**		**5.0000e-004**	**5.0000e-004**		**5.0000e-004**	**5.0000e-004**	**0.0000**	**7.1398**	**7.1398**	**1.4000e-004**	**1.3000e-004**	**7.1823**

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

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	133795	7.2000e-004	6.1700e-003	2.6200e-003	4.0000e-005		5.0000e-004	5.0000e-004		5.0000e-004	5.0000e-004	0.0000	7.1398	7.1398	1.4000e-004	1.3000e-004	7.1823
Other 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
Total		**7.2000e-004**	**6.1700e-003**	**2.6200e-003**	**4.0000e-005**		**5.0000e-004**	**5.0000e-004**		**5.0000e-004**	**5.0000e-004**	**0.0000**	**7.1398**	**7.1398**	**1.4000e-004**	**1.3000e-004**	**7.1823**

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

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	49121.9	8.7116	7.4000e-004	9.0000e-005	8.7565
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**8.7116**	**7.4000e-004**	**9.0000e-005**	**8.7565**

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

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse High Rise	49121.9	8.7116	7.4000e-004	9.0000e-005	8.7565
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**8.7116**	**7.4000e-004**	**9.0000e-005**	**8.7565**

6.0 Area Detail

6.1 Mitigation Measures Area

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

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0982	3.5400e-003	0.1246	2.0000e-005		8.6000e-004	8.6000e-004		8.6000e-004	8.6000e-004	0.0000	2.6516	2.6516	2.4000e-004	4.0000e-005	2.6710
Unmitigated	0.0982	3.5400e-003	0.1246	2.0000e-005		8.6000e-004	8.6000e-004		8.6000e-004	8.6000e-004	0.0000	2.6516	2.6516	2.4000e-004	4.0000e-005	2.6710

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	7.5200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0867					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.5000e-004	2.1100e-003	9.0000e-004	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4494	2.4494	5.0000e-005	4.0000e-005	2.4640
Landscaping	3.7200e-003	1.4300e-003	0.1237	1.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	0.2022	0.2022	1.9000e-004	0.0000	0.2070
Total	**0.0982**	**3.5400e-003**	**0.1246**	**2.0000e-005**		**8.6000e-004**	**8.6000e-004**		**8.6000e-004**	**8.6000e-004**	**0.0000**	**2.6516**	**2.6516**	**2.4000e-004**	**4.0000e-005**	**2.6710**

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

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	7.5200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0867					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	2.5000e-004	2.1100e-003	9.0000e-004	1.0000e-005		1.7000e-004	1.7000e-004		1.7000e-004	1.7000e-004	0.0000	2.4494	2.4494	5.0000e-005	4.0000e-005	2.4640
Landscaping	3.7200e-003	1.4300e-003	0.1237	1.0000e-005		6.9000e-004	6.9000e-004		6.9000e-004	6.9000e-004	0.0000	0.2022	0.2022	1.9000e-004	0.0000	0.2070
Total	**0.0982**	**3.5400e-003**	**0.1246**	**2.0000e-005**		**8.6000e-004**	**8.6000e-004**		**8.6000e-004**	**8.6000e-004**	**0.0000**	**2.6516**	**2.6516**	**2.4000e-004**	**4.0000e-005**	**2.6710**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

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

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	2.7752	0.0206	5.1000e-004	3.4414
Unmitigated	3.2594	0.0257	6.3000e-004	4.0912

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.119148	0.2348	2.0000e-005	0.0000	0.2360
Condo/Townhouse High Rise	0.781848 / 0.492904	3.0247	0.0257	6.3000e-004	3.8552
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**3.2594**	**0.0257**	**6.3000e-004**	**4.0912**

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

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 0.11188	0.2204	2.0000e-005	0.0000	0.2216
Condo/Townhouse High Rise	0.625479 / 0.462837	2.5547	0.0206	5.1000e-004	3.2198
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**2.7752**	**0.0206**	**5.1000e-004**	**3.4414**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Craig Apartments - Orange County, Annual

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

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1.1225	0.0663	0.0000	2.7811
Unmitigated	1.1225	0.0663	0.0000	2.7811

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Condo/Townhouse High Rise	5.52	1.1205	0.0662	0.0000	2.7760
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**1.1225**	**0.0663**	**0.0000**	**2.7811**

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

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	0.01	2.0300e-003	1.2000e-004	0.0000	5.0300e-003
Condo/Townhouse High Rise	5.52	1.1205	0.0662	0.0000	2.7760
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**1.1225**	**0.0663**	**0.0000**	**2.7811**

9.0 Operational Offroad

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

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

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

Boilers

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

User Defined Equipment

Equipment Type	Number

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

11.0 Vegetation

Appendix A2

Health Risk Assessment

Kimley»Horn

MEMORANDUM

To:	Ruben Salas, Kimley-Horn and Associates, Inc.
From:	Danielle Millar, Kimley-Horn and Associates, Inc.
Date:	December 16, 2022
Subject:	Preliminary Health Risk Assessment for the Craig Apartments Project in Buena Park

PURPOSE

The purpose of this Preliminary Health Risk Assessment is to evaluate potential health risks associated with Toxic Air Contaminants (TAC) including Diesel Particulate Matter (DPM) resulting from exposure to diesel truck traffic along Beach Boulevard in the City of Buena Park (City). This Preliminary Health Risk Assessment was prepared in accordance with the requirements of the South Coast Air Quality Management District (SCAQMD) to determine the health risks likely to occur in conjunction with the project site.

PROJECT LOCATION

The project site is a vacant 0.69-acre lot located at 7682, 7692, 7712, and 7722 Craig Avenue, in the City of Buena Park, Orange County, California, Assessor Parcel Numbers (APNs) 066-132-09, -15, -16, and 17. The project site has been heavily disturbed, and no native habitat nor ornamental habitat occurs onsite. The project site is surrounded by single family residential dwelling units to the north and west, with Craig Avenue directly adjacent to the north, commercial uses to the east and southeast, and the Brea Creek to the south. The site is relatively flat.

PROJECT DESCRIPTION

The proposed project involves the construction of 12 three-story townhouse-style apartments. The apartments would be divided between two buildings, each containing 6 apartments. The two buildings would be built in tandem with one building facing Craig Avenue and the second building behind building one. The project would total approximately 23,655-square-feet (SF) of building space and would include drive-in vehicle garages at ground level and two above ground floors of living space. The project would include perimeter landscaping and green space buffering the project from the single-family residential dwelling unit (DU) to the west. The project would include pedestrian walkways, visitor parking, and perimeter/security lighting. See Exhibit 1: Conceptual Site Plan for more details. The project site has an existing (Low Density Residential) General Plan land use designation and a Single Family Residential (RS-6) zoning district and requires a General Plan Amendment (GPA) and a Zone Change (ZC) to Medium Density Residential (RM-20).

Site Access

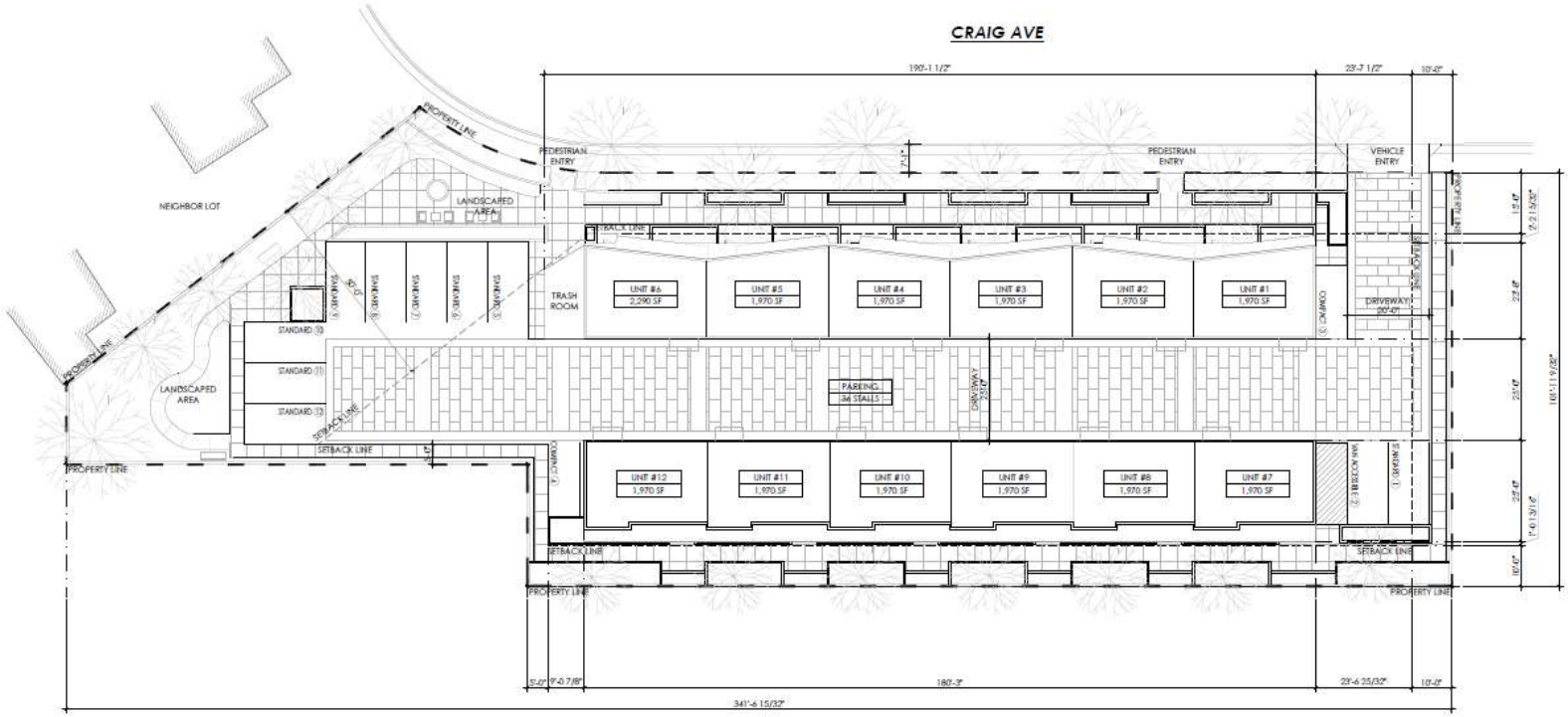
Regional access is provided on Interstate 5 (I-5) via the Beach Boulevard ramps. Local access is provided via Beach Boulevard (Highway 39) and Craig Avenue. Main project site vehicular access would be provided via one twenty-foot-wide paved driveway located on the northeast corner of the site on Craig Avenue. The project driveway would be designed in accordance with the City's Municipal Code (MC) 18.92.010, Access Requirements, by providing emergency vehicle access and mobility through a twenty-five-foot-wide internal driveway.

Parking

The project would provide thirty-six automobile parking spaces. Twenty-four of the parking spaces would be indoor (garage) parking spaces and twelve would be outdoor (visitor) parking spaces. Outdoor parking spaces would be mainly consolidated along the western side of the site with the balance of the outdoor parking spaces throughout the site.

Kimley»Horn

Exhibit 1: Conceptual Site Plan



ENVIRONMENTAL SETTING

Climate

The general region lies in the semi-permanent high-pressure zone of the eastern Pacific. The climate is mild and tempered by cool sea breezes. The usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, or Santa Ana winds. The extent and severity of the air pollution problem in the South Coast Air Basin (SCAB) is a function of the area's natural physical characteristics (weather and topography), as well as man-made influences (development patterns and lifestyle). Factors such as wind, sunlight, temperature, humidity, rainfall, and topography all affect the accumulation and/or dispersion of pollutants throughout the SCAB. These factors along with applicable regulations are discussed below.

The average annual temperature varies little throughout the SCAB, averaging 75 degrees Fahrenheit (°F). However, with a less-pronounced oceanic influence, the eastern inland portions of the SCAB show greater variability in annual minimum and maximum temperatures. All portions of the SCAB have had recorded temperatures over 100°F in recent years.

Meteorology

Although the SCAB has a semi-arid climate, the air near the surface is moist due to the presence of a shallow marine layer. Except for infrequent periods when dry, continental air is brought into the SCAB by offshore winds, the ocean effect is dominant. Periods with heavy fog are frequent, and low stratus clouds, occasionally referred to as "high fog," are a characteristic climate feature. Annual average relative humidity is 70 percent at the coast and 57 percent in the eastern part of the SCAB. Precipitation in the SCAB is typically nine to 14 inches annually and is rarely in the form of snow or hail due to typically warm weather. The frequency and amount of rainfall is greater in the coastal areas of the SCAB.

A temperature inversion is defined as an increase in temperature with height, or to the layer within which such an increase occurs. The height of the inversion is important in determining pollutant concentration. When the inversion is approximately 2,500 feet above sea level, the sea breezes carry the pollutants inland to escape over the mountain slopes or through the passes. At a height of 1,200 feet, the terrain prevents the pollutants from entering the upper atmosphere, resulting in a settlement in the foothill communities. Below 1,200 feet, the inversion puts a tight lid on pollutants, concentrating them in a shallow layer over the entire SCAB. Usually, inversions are lower before sunrise than during the day. Mixing heights for inversions are lower in the summer and more persistent, being partly responsible for the high levels of ozone (O_3) observed during summer months in the SCAB. Smog in southern California is generally the result of these temperature inversions combining with coastal day winds and local mountains to contain the pollutants for long periods of time, allowing them to form secondary pollutants by reacting with sunlight. The SCAB has a limited ability to disperse these pollutants due to typically low wind speeds.

The area in which the project is located offers clear skies and sunshine, yet is still susceptible to air inversions. These inversions trap a layer of stagnant air near the ground, where it is then further loaded with pollutants. These inversions cause haziness, which is caused by moisture, suspended dust, and a variety of chemical aerosols emitted by trucks, automobiles, furnaces, and other sources.

Toxic Air Contaminants

Toxic Air Contaminants (TACs) are airborne substances capable of causing short-term (acute) and 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 approximately 200 compounds, including particulate emissions from diesel-fueled engines.

Hazardous Air Pollutants (HAP) is a term used by the Federal Clean Air Act (FCAA) that includes a variety of pollutants generated or emitted by industrial production activities. Identified as TACs under the California Clean Air Act (CCAA), ten have been singled out through ambient air quality data as being the most substantial health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders. The California Air Resources Board (CARB) provides emission inventories for only the larger air basins.

TACs do not have ambient air quality standards because no safe levels of TACs can be determined. Instead, TAC impacts are evaluated by calculating the health risks associated with a given exposure. The requirements of the Air Toxic “Hot Spots” Information and Assessment Act (Assembly Bill [AB] 2588) apply to facilities that use, produce, or emit toxic chemicals. Facilities subject to the toxic emission inventory requirements of the act must prepare and submit toxic emission inventory plans and reports, and periodically update those reports.

Toxic contaminants often result from fugitive emissions during fuel storage and transfer activities, and from leaking valves and pipes. For example, the electronics industry, including semiconductor manufacturing, uses highly toxic chlorinated solvents in semiconductor production processes. Sources of air toxics go beyond industry. Automobile exhaust also contains toxic air pollutants such as benzene and 1,3-butadiene. DPM is emitted from both mobile and stationary sources. In California, on-road diesel-fueled engines contribute approximately 24 percent of the statewide total DPM, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about 5 percent of total DPM. It should be noted that CARB has developed several plans and programs to reduce diesel emissions such as the Diesel Risk Reduction Plan (DRRP), the Statewide Portable Equipment Registration Program (PERP), and the Diesel Off-Road Reporting System (DOORS). The PERP and DOORS programs allow owners or operators of portable engines and certain other types of equipment can register their units in order to operate their equipment throughout California without having to obtain individual permits from local air districts.

Diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer. Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by the Office of Health Hazard Assessment (OEHHA). CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

In its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, CARB estimates that diesel particle levels measured in California's air in 2000 could cause 540 "excess" cancers in a population of 1 million people over a 70-year lifetime. Other researchers and scientific organizations, including the National Institute for Occupational Safety and Health, have calculated cancer risks from diesel exhaust similar to those developed by OEHHA and CARB.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children. In California, diesel exhaust particles have been identified as a carcinogen.

REGULATORY SETTING

Federal

Federal Clean Air Act

The FCAA was amended in 1990 to address the numerous air pollutants that are known to cause or may reasonably be anticipated to cause adverse effects to human health or adverse environmental effects. 188 specific pollutants and chemical groups were initially identified as HAPs, and the list has been modified over time. The FCAA Amendments included new regulatory programs to control acid deposition and for the issuance of stationary source operating permits.

In 2001, the United States Environmental Protection Agency (U.S. EPA) issued its first Mobile Source Air Toxics Rule, which identified 21 mobile source air toxic (MSAT) compounds as being HAPs that required regulation. A subset of six of these MSAT compounds were identified as having the greatest influence on health and included benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, and DPM. More recently, the U.S. EPA issued a second MSAT Rule in February 2007, which generally supported the findings in the first rule and provided additional recommendations of compounds having the greatest impact on health. The rule also identified several engine emission certification standards that must be implemented. Unlike the criteria pollutants, toxics do not have National Ambient Air Quality Standards (NAAQS) making evaluation of their impacts more subjective.

National Emissions Standards for Hazardous Air Pollutants (NESHAPs) were incorporated into a greatly expanded program for controlling toxic air pollutants. The provisions for attainment and maintenance of the NAAQS were substantially modified and expanded. Other revisions included provisions regarding stratospheric ozone protection, increased enforcement authority, and expanded research programs.

Section 112 of the FCAA Amendments governs the federal control program for HAPs. NESHAPs are issued to limit the release of specified HAPs from specific industrial sectors. These standards are technology-based, meaning that they represent the best available control technology an industrial sector could afford. The level of emissions controls required by NESHAPs are not based on health risk considerations because allowable releases and resulting concentrations have not been determined to be safe for the general public. The FCAA does not establish air quality standards for HAPs that define legally acceptable concentrations of these pollutants in ambient air.

Federal Emissions Standards for On-Road Trucks

To reduce emissions from on-road, heavy-duty diesel trucks, the U.S. EPA established a series of increasingly strict emission standards for new engines, starting in 1988. The U.S. EPA promulgated the final and cleanest standards with the 2007 Heavy-Duty Highway Rule.[1] The particulate matter (PM) emission standard of 0.01 gram per horsepower-hour (g/hp-hr) is required for new vehicles beginning with model year 2007. Also, the oxides of nitrogen (NO_X) and nonmethane hydrocarbon (NMHC) standards of 0.20 g/hp-hr and 0.14 g/hp-hr, respectively, were phased in together between 2007 and 2010 on a percent of sales basis: 50 percent from 2007 to 2009 and 100 percent in 2010.

[1] United States Environmental Protection Agency (U.S. EPA), *Control of Air Pollution from New Motor Vehicles: Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*, Final Rule. 40 Code of Federal Regulations, Parts 69, 80, and 86. January 18, 2001.

State of California

California Air Resources Board

CARB's statewide comprehensive air toxics program was established in 1983 with AB 1807 the Toxic Air Contaminant Identification and Control Act (Tanner Air Toxics Act of 1983). AB 1807 created California's program to reduce exposure to air toxics and sets forth a formal procedure for CARB to designate substances as TACs. Once a TAC is identified, CARB adopts an airborne toxics control measure (ATCM) for sources that emit designated TACs. If there is a safe threshold for a substance at which there is no toxic effect, the control measure must reduce exposure to below that threshold. If there is no safe threshold, the measure must incorporate toxics best available control technology (T-BACT) to minimize emissions.

CARB also administers the state's mobile source emissions control program and oversees air quality programs established by state statute, such as AB 2588. Under AB 2588, TAC emissions from individual facilities are quantified and prioritized by the air quality management district or air pollution control district. High priority facilities are required to perform a health risk assessment and, if specific thresholds are exceeded, required to communicate the results to the public in the form of notices and public meetings. In September 1992, the AB 2588 was amended by Senate Bill (SB) 1731 which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

***Diesel Risk Reduction Plan*.** The identification of DPM as a TAC in 1998 led CARB to adopt the Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles (DRRP) in October 2000. The DRRP's goals include an 85 percent reduction in DPM by 2020 from the 2000 baseline.[2] CARB estimates that emissions of DPM in 2035 will be less than half those in 2010, further reducing statewide cancer risk and non-cancer health effects.[3] The DRRP includes regulations to establish cleaner new diesel engines, cleaner in-use diesel engines (retrofits), and cleaner diesel fuel.

Truck and Bus Regulation Reducing Emissions from Existing Diesel Vehicles. On December 12, 2008, CARB approved the Truck and Bus Regulation to significantly reduce PM and NO_X emissions from existing diesel vehicles operating in California. The regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Heavier trucks must be retrofitted with PM filters beginning January 1, 2012, and older trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses would need to have 2010 model year engines or equivalent.

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[2] California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.

[3] California Air Resources Board, *Overview: Diesel Exhaust & Health*, available at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health, accessed December 2022.

The regulation applies to most privately and federally-owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. Small fleets with three or fewer diesel trucks can delay compliance for heavier trucks and there are several extensions for low-mileage construction trucks, early PM filter retrofits, adding cleaner vehicles, and other situations. Privately and publicly owned school buses have different requirements.

CARB 2017 Technical Advisory (Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways). CARB published a Technical Advisory in 2017 to provide planners and other stakeholders involved in land use planning and decision-making with information on scientifically based strategies to reduce exposure to traffic emissions near high-volume roadways. Near-roadway development is a result of a variety of factors, including economic growth, demand for built environment uses, and the scarcity of developable land in some areas. The Technical Advisory notes that research has demonstrated the public health, climate, financial, and other benefits of compact, infill development along transportation corridors, and demonstrates that planners, developers, and local governments can pursue infill development while simultaneously reducing exposure to traffic-related pollution. On-site strategies to remove air pollution identified in the Technical Advisory include the use of particle filtration systems (i.e., high efficiency filtration in mechanical ventilation systems), solid barriers, and vegetation.

CARB Advanced Clean Truck Regulation. CARB adopted the Advanced Clean Truck Regulation in June 2020 requiring truck manufacturers to transition from diesel trucks and vans to electric zero-emission trucks beginning in 2024. By 2045, every new truck sold in California is required to be zero-emission. This rule directly addresses disproportionate risks and health and pollution burdens and puts California on the path for an all zero-emission short-haul drayage fleet in ports and railyards by 2035, and zero-emission "last-mile" delivery trucks and vans by 2040. The Advanced Clean Truck Regulation accelerates the transition of zero-emission medium-and heavy-duty vehicles from Class 2b to Class 8. The regulation has two components including a manufacturer sales requirement, and a reporting requirement:

- Zero-Emission Truck Sales: Manufacturers who certify Class 2b through 8 chassis or complete vehicles with combustion engines are required to sell zero-emission trucks as an increasing percentage of their annual California sales from 2024 to 2035. By 2035, zero-emission truck/chassis sales need to be 55 percent of Class 2b – 3 truck sales, 75 percent of Class 4 – 8 straight truck sales, and 40 percent of truck tractor sales.

- Company and Fleet Reporting: Large employers including retailers, manufacturers, brokers and others would be required to report information about shipments and shuttle services. Fleet owners, with 50 or more trucks, would be required to report about their existing fleet operations. This information would help identify future strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

California Energy Commission - Title 24 Building Energy Efficiency Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings, as specified in California Code of Regulations (CCR) Title 24 Part 6, were established 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 efficiency technologies and methods. The 2019 Energy Standards include requirements for mandatory mechanical ventilation intended to improve indoor air quality in homes, and requirements for Minimum Efficiency Reporting Value (MERV) 13 air filtration on space conditioning systems, and ventilation systems that provide outside air to a dwelling's occupiable space. The Residential Compliance Manual for the 2019 Building Energy Efficiency Standards[4] notes that air filter efficiencies of at least MERV 13 protect occupants from exposure to the smaller airborne particles (i.e., $PM_{2.5}$) that are known to adversely affect respiratory health. CCR Title 24 Part 6 requires a particle size efficiency rating equal to or greater than 85 percent in the 1.0 to 0.3 µm range.

CalEnviroScreen

OEHHA has developed CalEnviroScreen 4.0, which is a mapping tool that helps identify California communities that are most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects. CalEnviroScreen uses environmental, health, and socioeconomic information to produce scores for every census tract in the State. The scores are mapped so that different communities can be compared. An area with a high score is one that experiences a much higher pollution burden than areas with low scores.

According to CalEnviroScreen, the project site is located within Census Tract 6059110606, which is within the 82nd percentile[5]. It should be noted that the CalEnviroScreen scores are not an expression of health risk, and do not provide quantitative information on increases in cumulative impacts for specific sites or projects. Further, as a comparative screening tool, the results do not provide a basis for determining when differences between scores are significant in relation to public health or the environment.

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

[4] On August 11, 2021, the California Energy Commission (CEC) adopted the 2022 Energy Code, which also requires air filter efficiencies of at least MERV 13. Buildings whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.

[5] California Office of Health Hazard Assessment, *CalEnviroScreen 4.0*, https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40, accessed December 2022.

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.

Regional

South Coast Air Quality Management District

The CCAA provides the SCAQMD with the authority to manage transportation activities at indirect sources and regulate stationary source emissions. Indirect sources of pollution are generated when minor sources collectively emit a substantial amount of pollution. An example of this would be the motor vehicles at an intersection, a mall, and on highways. As a State agency, CARB regulates motor vehicles and fuels for their emissions.

Air Toxics Control Plan

The Air Toxics Control Plan (March 2000, revised March 26, 2004) is a planning document designed to examine the overall direction of the SCAQMD's air toxics control program. It includes development and implementation of strategic initiatives to monitor and control air toxics emissions. Control strategies that are deemed viable and are within the SCAQMD's jurisdiction will each be brought to the SCAQMD Board for further consideration through the normal public review process. Strategies that are to be implemented by other agencies will be developed in a cooperative effort, and the progress will be reported back to the Board periodically.

Multiple Air Toxics Exposure Study

The SCAQMD conducted an in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California. The Multiple Air Toxics Exposure Study in the SCAB (MATES V) (August 2021) shows that carcinogenic risk from air toxics in the SCAB, based on the average concentrations at the 10 monitoring sites, is approximately 40 percent lower than the monitored average in MATES IV and 84 percent lower than the average in MATES II.

MATES V is the most comprehensive dataset documenting the ambient air toxic levels and health risks associated with the SCAB emissions. Therefore, MATES V study represents the baseline health risk for a cumulative analysis. MATES V estimates the average excess cancer risk level from exposure to TACs is 424 in one million basin wide. In comparison, the MATES IV basin average risk was 897 per million. These model estimates were based on monitoring data collected at ten fixed sites within the SCAB. None of the fixed monitoring sites are near the project site. However, MATES V has extrapolated the excess cancer risk levels throughout the SCAB by modeling the specific grids. MATES V modeling

predicted an excess cancer risk of 450 in one million for the project area[6]. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 70.2 percent of the total risk shown in MATES V in this area.

SIGNIFICANCE CRITERIA AND METHODOLOGY

Health Risk Analysis Thresholds

Project health risks are determined by examining the types and levels of air toxics generated and the associated impacts on factors that affect air quality. While the final determination of significance thresholds is within the purview of the lead agency pursuant to the State CEQA Guidelines, the SCAQMD recommends that the following air pollution thresholds be used by lead agencies in determining whether the impacts from the project are significant. If the lead agency finds that the project has the potential to exceed the air pollution thresholds, the project should be considered significant. The thresholds for air toxic emissions are as follows.

- Cancer Risk: Emit carcinogenic or toxic contaminants that equal or exceed the maximum individual cancer risk of 10 in one million.
- Non-Cancer Risk: Emit toxic contaminants that equal or exceed the maximum hazard index of 1.0.

Cancer risk is expressed in terms of expected incremental incidence per million population. The SCAQMD has established an incidence rate of 10 persons per million as the maximum acceptable incremental cancer risk due to DPM exposure. This threshold serves to determine whether or not a given project has a potentially significant development-specific incremental impact. The 10 in one million standard is a health-protective significance threshold. A risk level of 10 in one million implies a likelihood that up to 10 persons, out of one million equally exposed people would contract cancer if exposed continuously (24 hours per day) to the levels of toxic air contaminants over a specified duration of time. This risk would be an excess cancer that is in addition to any cancer risk borne by a person not exposed to these air toxics. To put this risk in perspective, the risk of dying from accidental drowning is 1,000 in a million which is 100 times more than the SCAQMD's threshold of 10 in one million.

The SCAQMD has also established non-carcinogenic risk parameters for use in HRAs. Noncarcinogenic risks are quantified by calculating a "hazard index," expressed as the ratio between the ambient pollutant concentration and its toxicity or Reference Exposure Level (REL). An REL is a concentration at or below which health effects are not likely to occur. A hazard index of less than 1.0 means that

[6] South Coast Air Quality Management District, *MATES V Estimated Risk*, https://experience.arcgis.com/experience/79d3b6304912414bb21ebdde80100b23/page/Main-Page/?data_id=dataSource_105-a5ba9580e3aa43508a793fac819a5a4d%3A334&views=Click-tabs-for-other-data%2CCancer-Risk

adverse health effects are not expected. Within this analysis, non-carcinogenic exposures of less than 1.0 are considered less than significant.

Methodology

The air dispersion modeling for the HRA was performed using the U.S. EPA AERMOD dispersion model. AERMOD is a steady-state, multiple-source, Gaussian dispersion model designed for use with emission sources situated in terrain where ground elevations can exceed the stack heights of the emission sources (not a factor in this case). AERMOD requires hourly meteorological data consisting of wind vector, wind speed, temperature, stability class, and mixing height. Surface and upper air meteorological data are provided by the SCAQMD. Surface and upper air meteorological data from the Upland Monitoring Station was selected as being the most representative for meteorology based on proximity to the project site.

The emission source in the model are line volume sources along Beach Boulevard[7]. Mobile sources were modeled with two sets of volume sources. One set to characterize light-, medium-, and heavy-duty truck DPM (PM_{10}) emissions and another set for gasoline powered automobiles total organic gases (TOG) emissions. Heavy duty vehicle emissions were assigned a release height of 10 feet (3.7 meters), a plume height of 20 feet (6.2 meters). A release height of 10 feet resembles the average stack height for trucks and the plume height is based on U.S. EPA guidance for vehicle volume sources. For automobile sources, a release height of two feet (0.6 meters) and a plume height of 3.9 feet (1.2 meters) was used.

AERMOD was run to obtain the peak 1-hour and annual average (period) concentration in micrograms per cubic meter ($\mu g/m^3$) of PM_{10} at the future potential on-site sensitive receptors. According to the SCAQMD's Supplemental Guidelines for Preparing Risk Assessments for AB 2588, air dispersion modeling is required to estimate annual average concentrations to calculate the Maximum Individual Cancer Risk (MICR), the maximum chronic HI, the zones of impact, and excess cancer burden, as well as peak hourly concentrations to calculate the health impact from substances with acute non-cancer health effects. To achieve these goals, a receptor grid was placed over the project site to cover the zone of impact. According to the SCAQMD, in order "to identify the maximum impacted receptors (i.e., peak cancer risk and peak hazard indices), a grid spacing of 100 meters or less must be used" (see page 16 of SCAQMD's Supplemental Guidelines). Due to the size of the project site, on-site receptors were modeled with a 10-meter grid spacing. In addition, National Elevation Dataset (NED) terrain data was imported into AERMOD for the project. The modeling and analysis was prepared in accordance with the SCAQMD Modeling Guidance for AERMOD[8].

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[7] Emissions from vehicle traffic along Beach Boulevard were calculated using information derived from traffic count, vehicle fleet profile, vehicle speed data collected by the California Department of Transportation (Caltrans) 2020 Annual Average Daily Traffic (AADT) census. (Available at: https://dot.ca.gov/programs/traffic-operations/census)

[8] South Coast Air Quality Management District, *SCAQMD Modeling Guidance for AERMOD*, http://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance, March 2022.

Note that the concentration estimate developed using this methodology is conservative and is not a specific prediction of the actual concentrations that would occur at the project site any one point in time. Actual 1-hour and annual average concentrations are dependent on numerous variables, particularly the number and type of vehicles/trucks traveling during time periods of adverse meteorology.

Residents could occupy the proposed on-site housing for over 30 years. A health risk computation was performed to determine the risk of developing an excess cancer risk calculated on these worst-case exposure duration scenarios. The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the OEHHA Guidance Manual. Only the risk associated with the worst-case location of the site was assessed.

Risk and Hazard Assessment

Cancer Risk. Based on the OEHHA methodology, residential inhalation cancer risk from annual average DPM concentrations are calculated by multiplying the daily inhalation dose, cancer potency factor, age sensitivity factor (ASF), frequency of time spent at home, and exposure duration divided by averaging time, yielding the excess cancer risk. These factors are discussed in more detail below. It is important to note that exposure duration is based on continual heavy truck operation along nearby roadways. Exposure through inhalation (Dose-air) is a function of breathing rate, exposure frequency, and concentration of substance in the air. To estimate cancer risk, the dose was estimated by applying the following formula to each ground-level concentration:

$$\text{Dose-air} = C_{air} * (BR/BW) * A * EF * 10^{-6}$$

Dose-air =	dose through inhalation (mg/kg/day)
C_{air} =	air concentration ($\mu g/m^3$) from air dispersion model
(DBR/BW) =	daily breathing rate normalized to body weight (L/kg bodyweight-day)
A =	inhalation absorption factor (unitless)
EF =	exposure frequency (approximately 350 days per year for residential)
10^{-6} =	conversion factor (micrograms to milligrams, liters to cubic meters)

OEHHA developed ASFs to consider the increased sensitivity to carcinogens during early-life exposure. Fraction of time at home (FAH) during the day is used to adjust exposure duration and cancer risk from a specific facility's emissions, based on the assumption that exposure to the facility's emissions are not occurring away from home. The factors used in the health risk assessment are shown in Table 1: Age Sensitivity Factors, Fraction of Time at Home, and Daily Breathing Rates.

Table 1: Age Sensitivity Factors, Fraction of Time at Home, and Daily Breathing Rates					
Age	**Exposure Frequency (days/year)**	**Exposure Duration (years)**	**Age Sensitivity Factor[1] (ASF)**	**Fraction of Time at Home (FAH)**	**Daily Breathing Rate (L/kg BW-day[2])**
Residents					
Third trimester	350	0.25	10	85%	361
0 to 2 years	350	2	10	85%	1,090
Ages 2 through 15 years	350	14	3	72%	745
Ages 16 and greater	350	14	1	73%	335
Workers[3]	250	25	1	N/A	230
Students[3]	180	9	3	N/A	640
1. Accounts for potential increased sensitivity to carcinogens during childhood. 2. 95th percentile daily breathing rate normalized to body weight (L/kg body weight - day). 3. Worker and Student breathing rates are 95th percentile 8-hour breathing rates based on moderate intensity activity.					
Source: California Office of Environmental Health Hazard Assessment, *Air Toxics Program Guidance Manual for the Preparation of Health Risk Assessments*, February 2015 and South Coast Air Quality Management District, Permit Application Package "N" Risk Assessment Procedures for Rules 1401, 1401.1, and 212 Version 8.1.					

To estimate the cancer risk, the dose is multiplied by the cancer potency factor, the ASF, the exposure duration divided by averaging time, and the frequency of time spent at home (for residents only):

$$Risk_{inh\text{-}res} = (Dose_{air}*CPF*ASF*(ED/AT)*FAH)$$

$Risk_{inh\text{-}res}$ = residential inhalation cancer risk (potential chances per million)
$Dose_{air}$ = daily dose through inhalation (mg/kg-day)
CPF = inhalation cancer potency factor (mg/kg-day-1)
ASF = age sensitivity factor for a specified age group (unitless)
ED = exposure duration (years)
AT = averaging time of lifetime cancer risk (years)
FAH = fraction of time spent at home (unitless)

Chronic Non-Cancer Hazard. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. According to OEHHA, the REL for DPM is 5 and the target organ is the respiratory system. The following equation was used to determine the non-cancer risk:

$$\text{Hazard Index} = C_i/REL_i$$

C_i = concentration in the air of substance i (annual average concentration in $\mu g/m^3$)
REL_i = chronic noncancer Reference Exposure Level for substance ($\mu g/m^3$)

Acute Non-Cancer Hazard. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive individuals

within the population. The calculation of acute non-cancer impacts is similar to the procedure for chronic non-cancer impacts. The equation is as follows:

Acute HQ = Maximum Hourly Air Concentration ($\mu g/m^3$) / Acute REL ($\mu g/m^3$)

Health Risk Computation. A health risk computation was performed to determine the risk of developing an excess cancer risk calculated on a 30-year exposure scenario using CARB's Risk Assessment Stand Alone Tool (RAST). Health risk were analyzed at the point of maximum impact and are a conservative estimate. The pollutant concentrations are then used to estimate the long-term cancer health risks to an individual as well as the non-cancer chronic health index.

The on-site impacts would occur from the diesel trucks and vehicles traveling along Beach Boulevard. The cancer and chronic health risks are based on the annual average concentration of PM_{10} (used as a proxy for DPM). The chronic and carcinogenic health risk calculations are based on the standardized equations contained in the U.S. EPA *Human Health Evaluation Manual* (1991) and the OEHHA Guidance Manual (2015).

POTENTIAL HEALTH RISK IMPACTS

CARB identified DPM as a TAC in 1998. Mobile sources (including trucks, buses, automobiles, trains, ships, and farm equipment) are by far the largest source of diesel emissions. The exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Diesel exhaust is composed of two phases, either gas or particulate – both contribute to the risk. The gas phase is composed of many of the urban TACs, such as acetaldehyde, acrolein, benzene, 1,3-butadiene, formaldehyde, and polycyclic aromatic hydrocarbons. The particulate phase has many different types that can be classified by size or composition. The sizes of diesel particulates of greatest health concern are fine and ultrafine particles. These particles may be composed of elemental carbon with adsorbed compounds such as organics, sulfates, nitrates, metals, and other trace elements. Diesel exhaust is emitted from a broad range of on- and off-road diesel engines. As the project proposes new residences near Beach Boulevard, the operational health risk addresses potential impacts to future on-site receptors.

Carcinogenic Risk

The risk analysis evaluates impacts from Beach Boulevard to future potential receptors located on the project site. Pursuant to California Building Industry Association v. Bay Area Air Quality Management District (2015) 62 Cal.4th 369, Case No. S213478, agencies are not required to analyze the CEQA impact of existing environmental conditions on a project's future users or residents, unless the proposed project risks exacerbate those environmental hazards or conditions that already exist. Nevertheless, the following mobile source health risk analysis has been prepared as an information item for land use decision making but is not a CEQA required analysis condition.

The pollutant concentrations modeled in AERMOD represent the exposure levels outdoors. OEHHA conservatively does not include indoor exposure adjustments for residents. However, the typical person spends the majority of time indoors rather than remaining outdoors in the same location for 24 hours a day.[9] Therefore, the AERMOD outdoor pollutant concentrations are not representative of actual exposure at the project site. As noted in the Regulatory Setting above, CCR Title 24 Part 6 requires new development to use MERV 13 air filtration on space conditioning systems and ventilation systems that provide outside air to the occupiable space of a dwelling. A MERV 13 filter has a particle removal efficiency in the range of 80-90 percent. An 80 percent removal efficiency was conservatively used for the purposes of this study. According to the U.S. EPA's *Exposure Factor Handbook* (2011), on average, people spend 90 percent of their time indoors. As residents are not always indoors, the filtration's overall effectiveness accounts for the time spent outdoors, which equates to approximately three hours per day. It is noted that this is a conservative assumption for this project, as all of the time spent outdoors would not occur at the project site.

Based on the AERMOD outputs, the highest expected annual average diesel PM_{10} emission concentrations from diesel truck traffic at the closest residential receptor on the project site would be 0.00385 µg/m^3 during opening year. The project's MERV 13 air filtration systems have an average particle size removal efficiency of approximately 75 percent for 0.3 to 1.0 µg/m^3 (DPM) and 90 percent for 1.0 to 10 µg/m^3 (PM_{10} and $PM_{2.5}$) based on ASHRAE Standard 52.2. The filters would be installed in residential units prior to occupancy, and maintenance with filters of the same value would be included in the project's operation and maintenance manual. The project's MERV 13 air filtration systems would reduce the highest expected annual average diesel PM_{10} emission concentrations conservatively by 75 percent to 0.000963 µg/m^3 during opening year. The highest expected hourly TOG emission concentrations from automobile traffic at the project site would be 1.06 µg/m^3 (no reduction was applied to TOG concentrations).

Table 2: Risk Assessment Results shows the calculated carcinogenic risk at the project site from DPM and TOG due to Beach Boulevard emissions is 5.42 in one million (outdoor) and 2.92 in one million (indoor) for proposed on-site residents. Therefore, the carcinogenic risk associated with the project would be less than significant. It should be noted that project operations would not generate TACs. Therefore, there would be no impact to off-site receptors.

[9] California Air Resources Board Research Division and University of California, Berkeley, *Activity Patterns of California Residents,* May 1991. The study indicates that on average, adults and adolescents in California spent almost 15 hours per day inside their homes, and 6 hours in other indoor locations, for a total of 21 hours (87% of the day). Approximately two hours per day were spent in transit, and just over one hour per day was spent in outdoor locations.

Table 2: Risk Assessment Results			
Exposure Scenario	**Maximum Cancer Risk (Risk per Million)[1]**	**Significance Threshold (Risk per Million)**	**Exceeds Significance Threshold?**
Outdoor On-Site Resident Exposure[2]	5.42	10	No
Indoor On-Site Resident Exposure[2]	2.92	10	No

1. Refer to Appendix A: Modeling Data.
2. The maximum cancer for on-site residents would be experienced along the eastern edge of the project site, approximately 160 feet west of Beach Boulevard, based on worst-case exposure durations for the project, 95th percentile breathing rates, and 30-year averaging time.

Non-Carcinogenic Hazards

The significance thresholds for TAC exposure also require an evaluation of non-cancer risk known as hazard index. Non-cancer chronic impacts are calculated by dividing the annual average concentration by the REL for that substance. The REL is defined as the concentration at which no adverse non-cancer health effects are anticipated. The potential for acute non-cancer hazards is evaluated by comparing the maximum short-term exposure level to an acute REL. RELs are designed to protect sensitive receptors. The calculation of acute non-cancer impacts is similar to the procedure for chronic non-cancer impacts.

An acute or chronic hazard index of 1.0 is considered individually significant. The hazard index is calculated by dividing the acute or chronic exposure by the reference exposure level. The highest outdoor maximum chronic and acute hazard index associated with both DPM and TOG emissions at the project site would be 0.003 and 0.0006, respectively. Therefore, non-carcinogenic hazards are within acceptable limits and less than significant.

CONCLUSION

As described above, impacts related to residential cancer risk from vehicle travel along Beach Boulevard would be less than significant at the project site. Additionally, non-carcinogenic hazards are calculated to be within acceptable limits. Therefore, impacts related to health risk from the project would be less than significant.

Appendix A

Modeling Data

Traffic Volumes

	AADT	Percent Trucks	Truck ADT	Other Vehicle ADT
Beach Boulevard	68500	2.43%	1,665	66,835

Source: Caltrans, Traffic Census Program, 2020 Annual Average Daily Truck Traffic Volumes, https://dot.ca.gov/programs/traffic-operations/census

2024

Beach Blvd Emissions	Speed (mph)	Trips (veh/day)	Emission Factor (g/mi)	Length (mi)	Emissions (g/day)	Emission Rate (g/sec)
NB Truck Traffic	40	833	7.66E-03	1.32	8.44E+00	9.77E-05
SB Truck Traffic	40	833	7.66E-03	1.32	8.43E+00	9.76E-05
NB Auto Traffic	40	33,418	1.88E-02	1.32	8.33E+02	9.64E-03
SB Auto Traffic	40	33,418	1.88E-02	1.32	8.32E+02	9.63E-03

Toxic Air Contaminant Concentrations 2024 (Worst Case Resident)

			Percentage	µg/m³	µg/m³	µg/m³	µg/m³
INDEX	**POLID**	**Pollutant**	**Mass Fraction**	**AERMOD Annual**	**Annual MER Concentration**	**AERMOD Hourly**	**Acute Concentration**
1	9901	DPM	1	3.85E-03	3.85E-03		
2	75070	Acetaldehyde	2.80E-03	0.40	1.12E-03	1.06	2.97E-03
3	107028	Acrolein	1.30E-03		5.20E-04		1.38E-03
4	71432	Benzene	2.83E-02		1.13E-02		3.00E-02
5	106990	1,3-Butadiene	5.50E-03		2.20E-03		5.83E-03
6	100414	Ethyl benzene	1.17E-02		4.68E-03		1.24E-02
7	50000	Formaldehyde	1.58E-02		6.32E-03		1.67E-02
8	110543	Hexane	3.14E-02		1.26E-02		3.33E-02
9	67561	Methanol	1.20E-03		4.80E-04		1.27E-03
10	78933	Methly Ethyl Ketone	2.00E-04		8.00E-05		2.12E-04
11	91203	Naphthalene	5.00E-04		2.00E-04		5.30E-04
12	115071	Propylene	3.06E-02		1.22E-02		3.24E-02
13	100425	Styrene	1.20E-03		4.80E-04		1.27E-03
14	108883	Toluene	7.46E-02		2.98E-02		7.91E-02
15	1330207	Xylenes	5.38E-02		2.15E-02		5.70E-02

HARP 2 Risk Summary **Outdoor**

Third Trimester

				Cancer	Chronic	Acute	
INDEX	**POLID/CAS**	**Pollutant**	**CONC**	**INH_RISK**	**RESP**	**CONC**	**RESP**
1	9901	DieselExhPM	3.85E-03	3.33E-06	7.70E-04	0.00E+00	0.00E+00
2	75070	Acetaldehyde	1.12E-03	8.81E-09	8.00E-06	2.97E-03	6.32E-06
3	107028	Acrolein	5.20E-04	0.00E+00	1.49E-03	1.38E-03	5.52E-04
4	71432	Benzene	1.13E-02	8.89E-07	0.00E+00	3.00E-02	0.00E+00
5	106990	1,3-Butadiene	2.20E-03	1.04E-06	0.00E+00	5.83E-03	0.00E+00
6	100414	Ethyl Benzene	4.68E-03	3.20E-08	0.00E+00	1.24E-02	0.00E+00
7	50000	Formaldehyde	6.32E-03	1.04E-07	7.02E-04	1.67E-02	0.00E+00
8	110543	Hexane	1.26E-02	0.00E+00	0.00E+00	3.33E-02	0.00E+00
9	67561	Methanol	4.80E-04	0.00E+00	0.00E+00	1.27E-03	0.00E+00
10	78933	Methly Ethyl Ketone	8.00E-05	0.00E+00	0.00E+00	2.12E-04	1.63E-08
11	91203	Naphthalene	2.00E-04	1.89E-08	2.22E-05	5.30E-04	0.00E+00
12	115071	Propylene	1.22E-02	0.00E+00	4.07E-06	3.24E-02	0.00E+00
13	100425	Styrene	4.80E-04	0.00E+00	0.00E+00	1.27E-03	6.05E-08
14	108883	Toluene	2.98E-02	0.00E+00	0.00E+00	7.91E-02	1.58E-05
15	1330207	Xylenes	2.15E-02	0.00E+00	3.07E-05	5.70E-02	2.59E-06
		Total		5.42E-06	3.02E-03		5.77E-04
		Risk per Million		5.42			

With Fraction of Time Indoors

			Cancer	Chronic	Acute	
CONC	**INH_RISK**	**RESP**	**CONC**	**RESP**
9.63E-04	8.33E-07	1.93E-04	0.00E+00	0.00E+00
1.12E-03	8.81E-09	8.00E-06	2.97E-03	6.32E-06
5.20E-04	0.00E+00	1.49E-03	1.38E-03	5.52E-04
1.13E-02	8.89E-07	0.00E+00	3.00E-02	0.00E+00
2.20E-03	1.04E-06	0.00E+00	5.83E-03	0.00E+00
4.68E-03	3.20E-08	0.00E+00	1.24E-02	0.00E+00
6.32E-03	1.04E-07	7.02E-04	1.67E-02	0.00E+00
1.26E-02	0.00E+00	0.00E+00	3.33E-02	0.00E+00
4.80E-04	0.00E+00	0.00E+00	1.27E-03	0.00E+00
8.00E-05	0.00E+00	0.00E+00	2.12E-04	1.63E-08
2.00E-04	1.89E-08	2.22E-05	5.30E-04	0.00E+00
1.22E-02	0.00E+00	4.07E-06	3.24E-02	0.00E+00
4.80E-04	0.00E+00	0.00E+00	1.27E-03	6.05E-08
2.98E-02	0.00E+00	0.00E+00	7.91E-02	1.58E-05
2.15E-02	0.00E+00	3.07E-05	5.70E-02	2.59E-06
	2.92E-06	2.45E-03		5.77E-04
	2.92			

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 12/12/2022
** File: C:\Lakes\AERMOD View\Projects\Craig Apartments Project\Craig Apartments
Project.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE Beach Blvd DPM_
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 83011 Buena_Park
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL "Craig Apartments Project.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = BB_NB
** DESCRSRC Beach Blvd NB
** PREFIX
** Length of Side = 11.50
** Configuration = Adjacent
** Emission Rate = 0.0000976509
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 24
** 407682.702, 3748098.341, 23.38, 3.70, 5.35
** 407683.285, 3748215.487, 23.55, 3.70, 5.35
** 407685.616, 3748379.258, 23.54, 3.70, 5.35
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```
** 407683.889, 3748465.625, 23.52, 3.70, 5.35
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LOCATION L0007275 VOLUME 408084.060 3750016.327 33.49

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   LOCATION L0007277     VOLUME   408095.551 3750036.251 33.73
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** LINE VOLUME Source ID = BB_SB
** DESCRSRC Beach Blvd SB
** PREFIX
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** Configuration = Adjacent
** Emission Rate = 0.00009755
** Vertical Dimension = 6.22
** SZINIT = 2.89
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LOCATION L0007370 VOLUME 407670.260 3749110.559 24.10
LOCATION L0007371 VOLUME 407670.304 3749122.059 24.11
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LOCATION L0007373 VOLUME 407670.392 3749145.059 24.17
LOCATION L0007374 VOLUME 407670.049 3749156.549 24.13
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LOCATION L0007376 VOLUME 407668.797 3749179.515 23.88

LOCATION L0007377 VOLUME 407668.170 3749190.998 23.68
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LOCATION L0007379 VOLUME 407666.918 3749213.964 23.11
LOCATION L0007380 VOLUME 407665.818 3749225.411 22.74
LOCATION L0007381 VOLUME 407664.710 3749236.857 22.30
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LOCATION L0007387 VOLUME 407661.653 3749305.760 20.53
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LOCATION L0007396 VOLUME 407668.501 3749408.554 23.61
LOCATION L0007397 VOLUME 407671.416 3749419.678 24.19
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LOCATION L0007402 VOLUME 407691.246 3749473.495 26.81
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LOCATION L0007407 VOLUME 407723.211 3749521.134 28.07
LOCATION L0007408 VOLUME 407730.605 3749529.941 28.15
LOCATION L0007409 VOLUME 407737.999 3749538.749 28.22
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LOCATION L0007411 VOLUME 407753.521 3749555.708 28.27
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LOCATION L0007413 VOLUME 407769.411 3749572.336 28.28
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LOCATION L0007416 VOLUME 407793.963 3749596.573 28.29
LOCATION L0007417 VOLUME 407802.142 3749604.657 28.33
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LOCATION L0007421 VOLUME 407832.083 3749639.579 28.45
LOCATION L0007422 VOLUME 407839.506 3749648.362 28.53
LOCATION L0007423 VOLUME 407846.929 3749657.146 28.60
LOCATION L0007424 VOLUME 407854.327 3749665.948 28.66
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LOCATION L0007426 VOLUME 407867.020 3749685.128 28.79

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   LOCATION L0007430     VOLUME   407891.659 3749723.970 29.23
   LOCATION L0007431     VOLUME   407897.383 3749733.942 29.35
   LOCATION L0007432     VOLUME   407903.016 3749743.967 29.47
   LOCATION L0007433     VOLUME   407908.856 3749753.874 29.58
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   LOCATION L0007435     VOLUME   407920.535 3749773.688 29.78
   LOCATION L0007436     VOLUME   407926.375 3749783.595 29.87
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   LOCATION L0007455     VOLUME   408038.272 3749971.264 32.81
   LOCATION L0007456     VOLUME   408044.121 3749981.165 32.97
   LOCATION L0007457     VOLUME   408049.971 3749991.066 33.14
   LOCATION L0007458     VOLUME   408055.820 3750000.967 33.31
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   LOCATION L0007460     VOLUME   408067.519 3750020.770 33.51
   LOCATION L0007461     VOLUME   408073.369 3750030.671 33.63
   LOCATION L0007462     VOLUME   408079.146 3750040.614 33.71
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** Source Parameters **
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   SRCGROUP ALL
SO FINISHED
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** AERMOD Receptor Pathway
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RE STARTING
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RE FINISHED
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** AERMOD Meteorology Pathway
**************************************
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   PROFFILE "Met Data\KFUL_V9_ADJU\KFUL_v9.PFL"
   SURFDATA 3166 2012 Fullerton_Airport
   UAIRDATA 3190 2012
   PROFBASE 29.0 METERS
ME FINISHED
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   PLOTFILE PERIOD ALL "Craig Apartments Project.AD\PE00GALL.PLT" 32
   SUMMFILE "Craig Apartments Project.sum"
OU FINISHED
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** Project Parameters
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** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     11
** ZONEINX  0
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** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 12/12/2022
** File: C:\Lakes\AERMOD View\Projects\Craig Apartments Project\Craig Apartments
Project.ADI
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** AERMOD Control Pathway
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CO STARTING
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   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 83011 Buena_Park
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL "Craig Apartments Project.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
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**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = BB_NB
** DESCRSRC Beach Blvd NB
** PREFIX
** Length of Side = 11.50
** Configuration = Adjacent
** Emission Rate = 0.0000976509
** Vertical Dimension = 6.22
** SZINIT = 2.89
** Nodes = 24
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   LOCATION L0007100     VOLUME   407682.845 3748127.091 23.40
   LOCATION L0007101     VOLUME   407682.902 3748138.591 23.41
   LOCATION L0007102     VOLUME   407682.959 3748150.091 23.44
   LOCATION L0007103     VOLUME   407683.017 3748161.591 23.47
   LOCATION L0007104     VOLUME   407683.074 3748173.091 23.53
   LOCATION L0007105     VOLUME   407683.131 3748184.590 23.54
   LOCATION L0007106     VOLUME   407683.188 3748196.090 23.54
   LOCATION L0007107     VOLUME   407683.246 3748207.590 23.56
   LOCATION L0007108     VOLUME   407683.336 3748219.090 23.56
   LOCATION L0007109     VOLUME   407683.500 3748230.589 23.55
   LOCATION L0007110     VOLUME   407683.664 3748242.087 23.56
   LOCATION L0007111     VOLUME   407683.827 3748253.586 23.58
   LOCATION L0007112     VOLUME   407683.991 3748265.085 23.59
   LOCATION L0007113     VOLUME   407684.155 3748276.584 23.59
   LOCATION L0007114     VOLUME   407684.318 3748288.083 23.58
   LOCATION L0007115     VOLUME   407684.482 3748299.582 23.57
   LOCATION L0007116     VOLUME   407684.646 3748311.080 23.59
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LOCATION L0007148 VOLUME 407684.784 3748679.045 23.68
LOCATION L0007149 VOLUME 407684.800 3748690.545 23.67
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LOCATION L0007163 VOLUME 407685.030 3748851.545 23.48
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LOCATION L0007172 VOLUME 407685.178 3748955.045 23.69
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LOCATION L0007174 VOLUME 407685.211 3748978.045 23.99

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** PREFIX
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** Configuration = Adjacent
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** Vertical Dimension = 6.22
** SZINIT = 2.89
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** Source Parameters **
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   SRCPARAM L0007102     0.0000005278      3.70      5.35      2.89
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SRCPARAM L0007398     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007399     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007400     0.0000005273      3.70      5.35      2.89
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SRCPARAM L0007401     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007402     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007403     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007404     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007405     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007406     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007407     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007408     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007409     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007410     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007411     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007412     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007413     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007414     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007415     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007416     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007417     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007418     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007419     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007420     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007421     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007422     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007423     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007424     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007425     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007426     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007427     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007428     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007429     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007430     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007431     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007432     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007433     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007434     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007435     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007436     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007437     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007438     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007439     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007440     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007441     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007442     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007443     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007444     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007445     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007446     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007447     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007448     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007449     0.0000005273      3.70      5.35      2.89
SRCPARAM L0007450     0.0000005273      3.70      5.35      2.89
```

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   SRCPARAM L0007451     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007452     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007453     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007454     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007455     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007456     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007457     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007458     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007459     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007460     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007461     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007462     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007463     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007464     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007465     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007466     0.0000005273      3.70      5.35      2.89
   SRCPARAM L0007467     0.0000005273      3.70      5.35      2.89
** ------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED "Craig Apartments Project.rou"
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE "Met Data\KFUL_V9_ADJU\KFUL_v9.SFC"
   PROFFILE "Met Data\KFUL_V9_ADJU\KFUL_v9.PFL"
   SURFDATA 3166 2012 Fullerton_Airport
   UAIRDATA 3190 2012
   PROFBASE 29.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
```

```
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "Craig Apartments Project.AD\01H1GALL.PLT" 31
   PLOTFILE PERIOD ALL "Craig Apartments Project.AD\PE00GALL.PLT" 32
   SUMMFILE "Craig Apartments Project.sum"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     891       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
 ME W187     891       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                           ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                           ***        15:02:46

                                    PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                              ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
```

```
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for   370 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =     83011.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_10

 **Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates PERIOD Averages

 **This Run Includes:    370 Source(s);       1 Source Group(s); and      48
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    370 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
```

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 29.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ;
Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.7 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

**Detailed Error/Message File: Craig Apartments Project.err

**File for Summary of Results: Craig Apartments Project.sum

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007098	0	0.52780E-06	407682.7	3748104.1	23.4	3.70	5.35	2.89	YES	
L0007099	0	0.52780E-06	407682.8	3748115.6	23.4	3.70	5.35	2.89	YES	
L0007100	0	0.52780E-06	407682.8	3748127.1	23.4	3.70	5.35			

2.89 YES
L0007101 0 0.52780E-06 407682.9 3748138.6 23.4 3.70 5.35
2.89 YES
L0007102 0 0.52780E-06 407683.0 3748150.1 23.4 3.70 5.35
2.89 YES
L0007103 0 0.52780E-06 407683.0 3748161.6 23.5 3.70 5.35
2.89 YES
L0007104 0 0.52780E-06 407683.1 3748173.1 23.5 3.70 5.35
2.89 YES
L0007105 0 0.52780E-06 407683.1 3748184.6 23.5 3.70 5.35
2.89 YES
L0007106 0 0.52780E-06 407683.2 3748196.1 23.5 3.70 5.35
2.89 YES
L0007107 0 0.52780E-06 407683.2 3748207.6 23.6 3.70 5.35
2.89 YES
L0007108 0 0.52780E-06 407683.3 3748219.1 23.6 3.70 5.35
2.89 YES
L0007109 0 0.52780E-06 407683.5 3748230.6 23.6 3.70 5.35
2.89 YES
L0007110 0 0.52780E-06 407683.7 3748242.1 23.6 3.70 5.35
2.89 YES
L0007111 0 0.52780E-06 407683.8 3748253.6 23.6 3.70 5.35
2.89 YES
L0007112 0 0.52780E-06 407684.0 3748265.1 23.6 3.70 5.35
2.89 YES
L0007113 0 0.52780E-06 407684.2 3748276.6 23.6 3.70 5.35
2.89 YES
L0007114 0 0.52780E-06 407684.3 3748288.1 23.6 3.70 5.35
2.89 YES
L0007115 0 0.52780E-06 407684.5 3748299.6 23.6 3.70 5.35
2.89 YES
L0007116 0 0.52780E-06 407684.6 3748311.1 23.6 3.70 5.35
2.89 YES
L0007117 0 0.52780E-06 407684.8 3748322.6 23.6 3.70 5.35
2.89 YES
L0007118 0 0.52780E-06 407685.0 3748334.1 23.6 3.70 5.35
2.89 YES
L0007119 0 0.52780E-06 407685.1 3748345.6 23.6 3.70 5.35
2.89 YES
L0007120 0 0.52780E-06 407685.3 3748357.1 23.6 3.70 5.35
2.89 YES
L0007121 0 0.52780E-06 407685.5 3748368.6 23.6 3.70 5.35
2.89 YES
L0007122 0 0.52780E-06 407685.6 3748380.1 23.6 3.70 5.35
2.89 YES
L0007123 0 0.52780E-06 407685.4 3748391.6 23.6 3.70 5.35
2.89 YES
L0007124 0 0.52780E-06 407685.1 3748403.1 23.6 3.70 5.35
2.89 YES
L0007125 0 0.52780E-06 407684.9 3748414.6 23.6 3.70 5.35

2.89 YES
L0007126 0 0.52780E-06 407684.7 3748426.1 23.6 3.70 5.35
2.89 YES
L0007127 0 0.52780E-06 407684.5 3748437.6 23.6 3.70 5.35
2.89 YES
L0007128 0 0.52780E-06 407684.2 3748449.1 23.6 3.70 5.35
2.89 YES
L0007129 0 0.52780E-06 407684.0 3748460.6 23.6 3.70 5.35
2.89 YES
L0007130 0 0.52780E-06 407683.9 3748472.1 23.6 3.70 5.35
2.89 YES
L0007131 0 0.52780E-06 407684.0 3748483.6 23.5 3.70 5.35
2.89 YES
L0007132 0 0.52780E-06 407684.1 3748495.1 23.5 3.70 5.35
2.89 YES
L0007133 0 0.52780E-06 407684.2 3748506.6 23.5 3.70 5.35
2.89 YES
L0007134 0 0.52780E-06 407684.3 3748518.1 23.5 3.70 5.35
2.89 YES
L0007135 0 0.52780E-06 407684.3 3748529.6 23.5 3.70 5.35
2.89 YES
L0007136 0 0.52780E-06 407684.4 3748541.1 23.5 3.70 5.35
2.89 YES
L0007137 0 0.52780E-06 407684.5 3748552.6 23.5 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007138	0	0.52780E-06	407684.6	3748564.1	23.5	3.70	5.35	2.89	YES	
L0007139	0	0.52780E-06	407684.7	3748575.6	23.5	3.70	5.35	2.89	YES	
L0007140	0	0.52780E-06	407684.8	3748587.1	23.5	3.70	5.35			

2.89 YES
L0007141 0 0.52780E-06 407684.8 3748598.6 23.6 3.70 5.35
2.89 YES
L0007142 0 0.52780E-06 407684.9 3748610.1 23.6 3.70 5.35
2.89 YES
L0007143 0 0.52780E-06 407685.0 3748621.6 23.6 3.70 5.35
2.89 YES
L0007144 0 0.52780E-06 407685.1 3748633.1 23.6 3.70 5.35
2.89 YES
L0007145 0 0.52780E-06 407685.2 3748644.6 23.6 3.70 5.35
2.89 YES
L0007146 0 0.52780E-06 407685.1 3748656.0 23.7 3.70 5.35
2.89 YES
L0007147 0 0.52780E-06 407684.8 3748667.5 23.7 3.70 5.35
2.89 YES
L0007148 0 0.52780E-06 407684.8 3748679.0 23.7 3.70 5.35
2.89 YES
L0007149 0 0.52780E-06 407684.8 3748690.5 23.7 3.70 5.35
2.89 YES
L0007150 0 0.52780E-06 407684.8 3748702.0 23.7 3.70 5.35
2.89 YES
L0007151 0 0.52780E-06 407684.8 3748713.5 23.6 3.70 5.35
2.89 YES
L0007152 0 0.52780E-06 407684.8 3748725.0 23.6 3.70 5.35
2.89 YES
L0007153 0 0.52780E-06 407684.9 3748736.5 23.6 3.70 5.35
2.89 YES
L0007154 0 0.52780E-06 407684.9 3748748.0 23.6 3.70 5.35
2.89 YES
L0007155 0 0.52780E-06 407684.9 3748759.5 23.6 3.70 5.35
2.89 YES
L0007156 0 0.52780E-06 407684.9 3748771.0 23.6 3.70 5.35
2.89 YES
L0007157 0 0.52780E-06 407684.9 3748782.5 23.6 3.70 5.35
2.89 YES
L0007158 0 0.52780E-06 407684.9 3748794.0 23.6 3.70 5.35
2.89 YES
L0007159 0 0.52780E-06 407685.0 3748805.5 23.5 3.70 5.35
2.89 YES
L0007160 0 0.52780E-06 407685.0 3748817.0 23.5 3.70 5.35
2.89 YES
L0007161 0 0.52780E-06 407685.0 3748828.5 23.5 3.70 5.35
2.89 YES
L0007162 0 0.52780E-06 407685.0 3748840.0 23.5 3.70 5.35
2.89 YES
L0007163 0 0.52780E-06 407685.0 3748851.5 23.5 3.70 5.35
2.89 YES
L0007164 0 0.52780E-06 407685.0 3748863.0 23.5 3.70 5.35
2.89 YES
L0007165 0 0.52780E-06 407685.1 3748874.5 23.5 3.70 5.35

2.89 YES
L0007166 0 0.52780E-06 407685.1 3748886.0 23.5 3.70 5.35
2.89 YES
L0007167 0 0.52780E-06 407685.1 3748897.5 23.5 3.70 5.35
2.89 YES
L0007168 0 0.52780E-06 407685.1 3748909.0 23.5 3.70 5.35
2.89 YES
L0007169 0 0.52780E-06 407685.1 3748920.5 23.5 3.70 5.35
2.89 YES
L0007170 0 0.52780E-06 407685.1 3748932.0 23.5 3.70 5.35
2.89 YES
L0007171 0 0.52780E-06 407685.2 3748943.5 23.6 3.70 5.35
2.89 YES
L0007172 0 0.52780E-06 407685.2 3748955.0 23.7 3.70 5.35
2.89 YES
L0007173 0 0.52780E-06 407685.2 3748966.5 23.8 3.70 5.35
2.89 YES
L0007174 0 0.52780E-06 407685.2 3748978.0 24.0 3.70 5.35
2.89 YES
L0007175 0 0.52780E-06 407685.2 3748989.5 24.1 3.70 5.35
2.89 YES
L0007176 0 0.52780E-06 407685.2 3749001.0 24.0 3.70 5.35
2.89 YES
L0007177 0 0.52780E-06 407685.3 3749012.5 24.1 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007178	0	0.52780E-06	407685.3	3749024.0	24.0	3.70	5.35	2.89	YES	
L0007179	0	0.52780E-06	407685.3	3749035.5	23.9	3.70	5.35	2.89	YES	
L0007180	0	0.52780E-06	407685.3	3749047.0	23.9	3.70	5.35			

2.89 YES
L0007181 0 0.52780E-06 407685.3 3749058.5 23.9 3.70 5.35
2.89 YES
L0007182 0 0.52780E-06 407685.4 3749070.0 24.0 3.70 5.35
2.89 YES
L0007183 0 0.52780E-06 407685.4 3749081.5 24.0 3.70 5.35
2.89 YES
L0007184 0 0.52780E-06 407685.4 3749093.0 24.0 3.70 5.35
2.89 YES
L0007185 0 0.52780E-06 407685.4 3749104.5 24.1 3.70 5.35
2.89 YES
L0007186 0 0.52780E-06 407685.5 3749116.0 24.1 3.70 5.35
2.89 YES
L0007187 0 0.52780E-06 407685.5 3749127.5 24.1 3.70 5.35
2.89 YES
L0007188 0 0.52780E-06 407685.5 3749139.0 24.2 3.70 5.35
2.89 YES
L0007189 0 0.52780E-06 407685.5 3749150.5 24.2 3.70 5.35
2.89 YES
L0007190 0 0.52780E-06 407685.5 3749162.0 24.1 3.70 5.35
2.89 YES
L0007191 0 0.52780E-06 407685.6 3749173.5 23.9 3.70 5.35
2.89 YES
L0007192 0 0.52780E-06 407684.9 3749185.0 23.8 3.70 5.35
2.89 YES
L0007193 0 0.52780E-06 407684.2 3749196.5 23.6 3.70 5.35
2.89 YES
L0007194 0 0.52780E-06 407683.4 3749208.0 23.3 3.70 5.35
2.89 YES
L0007195 0 0.52780E-06 407682.6 3749219.4 23.0 3.70 5.35
2.89 YES
L0007196 0 0.52780E-06 407681.7 3749230.9 22.6 3.70 5.35
2.89 YES
L0007197 0 0.52780E-06 407680.8 3749242.4 22.2 3.70 5.35
2.89 YES
L0007198 0 0.52780E-06 407679.9 3749253.8 21.7 3.70 5.35
2.89 YES
L0007199 0 0.52780E-06 407679.0 3749265.3 21.2 3.70 5.35
2.89 YES
L0007200 0 0.52780E-06 407678.1 3749276.8 20.8 3.70 5.35
2.89 YES
L0007201 0 0.52780E-06 407677.2 3749288.2 20.6 3.70 5.35
2.89 YES
L0007202 0 0.52780E-06 407677.6 3749299.7 20.4 3.70 5.35
2.89 YES
L0007203 0 0.52780E-06 407678.0 3749311.2 20.4 3.70 5.35
2.89 YES
L0007204 0 0.52780E-06 407678.5 3749322.7 20.3 3.70 5.35
2.89 YES
L0007205 0 0.52780E-06 407678.9 3749334.2 20.3 3.70 5.35

2.89 YES
L0007206 0 0.52780E-06 407679.3 3749345.7 20.4 3.70 5.35
2.89 YES
L0007207 0 0.52780E-06 407680.2 3749357.2 20.8 3.70 5.35
2.89 YES
L0007208 0 0.52780E-06 407681.1 3749368.6 21.2 3.70 5.35
2.89 YES
L0007209 0 0.52780E-06 407682.2 3749380.1 21.7 3.70 5.35
2.89 YES
L0007210 0 0.52780E-06 407684.7 3749391.3 22.3 3.70 5.35
2.89 YES
L0007211 0 0.52780E-06 407687.2 3749402.5 22.8 3.70 5.35
2.89 YES
L0007212 0 0.52780E-06 407690.1 3749413.6 23.6 3.70 5.35
2.89 YES
L0007213 0 0.52780E-06 407693.4 3749424.6 24.3 3.70 5.35
2.89 YES
L0007214 0 0.52780E-06 407696.7 3749435.7 24.8 3.70 5.35
2.89 YES
L0007215 0 0.52780E-06 407701.6 3749446.0 25.4 3.70 5.35
2.89 YES
L0007216 0 0.52780E-06 407707.0 3749456.2 25.8 3.70 5.35
2.89 YES
L0007217 0 0.52780E-06 407712.4 3749466.3 26.2 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007218	0	0.52780E-06	407717.8	3749476.5	26.6	3.70	5.35	2.89	YES	
L0007219	0	0.52780E-06	407723.2	3749486.6	26.9	3.70	5.35	2.89	YES	
L0007220	0	0.52780E-06	407729.4	3749496.3	27.2	3.70	5.35			

2.89 YES
L0007221 0 0.52780E-06 407735.6 3749506.0 27.5 3.70 5.35
2.89 YES
L0007222 0 0.52780E-06 407742.0 3749515.6 27.7 3.70 5.35
2.89 YES
L0007223 0 0.52780E-06 407749.3 3749524.5 27.9 3.70 5.35
2.89 YES
L0007224 0 0.52780E-06 407756.6 3749533.4 27.9 3.70 5.35
2.89 YES
L0007225 0 0.52780E-06 407764.5 3749541.7 28.0 3.70 5.35
2.89 YES
L0007226 0 0.52780E-06 407772.5 3749549.9 28.1 3.70 5.35
2.89 YES
L0007227 0 0.52780E-06 407780.5 3749558.2 28.1 3.70 5.35
2.89 YES
L0007228 0 0.52780E-06 407788.5 3749566.4 28.2 3.70 5.35
2.89 YES
L0007229 0 0.52780E-06 407796.5 3749574.7 28.3 3.70 5.35
2.89 YES
L0007230 0 0.52780E-06 407804.5 3749582.9 28.5 3.70 5.35
2.89 YES
L0007231 0 0.52780E-06 407812.5 3749591.2 28.7 3.70 5.35
2.89 YES
L0007232 0 0.52780E-06 407820.5 3749599.5 28.8 3.70 5.35
2.89 YES
L0007233 0 0.52780E-06 407828.5 3749607.7 28.9 3.70 5.35
2.89 YES
L0007234 0 0.52780E-06 407836.5 3749616.0 29.0 3.70 5.35
2.89 YES
L0007235 0 0.52780E-06 407843.9 3749624.8 29.1 3.70 5.35
2.89 YES
L0007236 0 0.52780E-06 407851.2 3749633.7 29.1 3.70 5.35
2.89 YES
L0007237 0 0.52780E-06 407858.5 3749642.6 29.2 3.70 5.35
2.89 YES
L0007238 0 0.52780E-06 407865.8 3749651.5 29.2 3.70 5.35
2.89 YES
L0007239 0 0.52780E-06 407873.1 3749660.4 29.3 3.70 5.35
2.89 YES
L0007240 0 0.52780E-06 407879.8 3749669.7 29.4 3.70 5.35
2.89 YES
L0007241 0 0.52780E-06 407886.4 3749679.1 29.4 3.70 5.35
2.89 YES
L0007242 0 0.52780E-06 407893.0 3749688.5 29.5 3.70 5.35
2.89 YES
L0007243 0 0.52780E-06 407899.6 3749697.9 29.6 3.70 5.35
2.89 YES
L0007244 0 0.52780E-06 407906.2 3749707.4 29.7 3.70 5.35
2.89 YES
L0007245 0 0.52780E-06 407912.1 3749717.3 29.7 3.70 5.35

2.89 YES
L0007246 0 0.52780E-06 407917.9 3749727.2 29.7 3.70 5.35
2.89 YES
L0007247 0 0.52780E-06 407923.8 3749737.0 29.8 3.70 5.35
2.89 YES
L0007248 0 0.52780E-06 407929.7 3749746.9 29.8 3.70 5.35
2.89 YES
L0007249 0 0.52780E-06 407935.5 3749756.8 29.8 3.70 5.35
2.89 YES
L0007250 0 0.52780E-06 407941.2 3749766.8 29.9 3.70 5.35
2.89 YES
L0007251 0 0.52780E-06 407946.9 3749776.8 29.9 3.70 5.35
2.89 YES
L0007252 0 0.52780E-06 407952.6 3749786.8 30.0 3.70 5.35
2.89 YES
L0007253 0 0.52780E-06 407958.3 3749796.8 30.0 3.70 5.35
2.89 YES
L0007254 0 0.52780E-06 407964.0 3749806.8 30.1 3.70 5.35
2.89 YES
L0007255 0 0.52780E-06 407969.7 3749816.8 30.2 3.70 5.35
2.89 YES
L0007256 0 0.52780E-06 407975.4 3749826.8 30.2 3.70 5.35
2.89 YES
L0007257 0 0.52780E-06 407981.0 3749836.8 30.4 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007258	0	0.52780E-06	407986.7	3749846.8	30.5	3.70	5.35	2.89	YES	
L0007259	0	0.52780E-06	407992.4	3749856.8	30.6	3.70	5.35	2.89	YES	
L0007260	0	0.52780E-06	407998.1	3749866.8	30.8	3.70	5.35			

2.89 YES
L0007261 0 0.52780E-06 408003.8 3749876.8 31.0 3.70 5.35
2.89 YES
L0007262 0 0.52780E-06 408009.5 3749886.8 31.2 3.70 5.35
2.89 YES
L0007263 0 0.52780E-06 408015.2 3749896.8 31.4 3.70 5.35
2.89 YES
L0007264 0 0.52780E-06 408020.9 3749906.7 31.6 3.70 5.35
2.89 YES
L0007265 0 0.52780E-06 408026.6 3749916.7 31.8 3.70 5.35
2.89 YES
L0007266 0 0.52780E-06 408032.4 3749926.7 32.0 3.70 5.35
2.89 YES
L0007267 0 0.52780E-06 408038.1 3749936.6 32.2 3.70 5.35
2.89 YES
L0007268 0 0.52780E-06 408043.8 3749946.6 32.4 3.70 5.35
2.89 YES
L0007269 0 0.52780E-06 408049.6 3749956.6 32.6 3.70 5.35
2.89 YES
L0007270 0 0.52780E-06 408055.3 3749966.5 32.8 3.70 5.35
2.89 YES
L0007271 0 0.52780E-06 408061.1 3749976.5 33.0 3.70 5.35
2.89 YES
L0007272 0 0.52780E-06 408066.8 3749986.4 33.1 3.70 5.35
2.89 YES
L0007273 0 0.52780E-06 408072.6 3749996.4 33.2 3.70 5.35
2.89 YES
L0007274 0 0.52780E-06 408078.3 3750006.4 33.4 3.70 5.35
2.89 YES
L0007275 0 0.52780E-06 408084.1 3750016.3 33.5 3.70 5.35
2.89 YES
L0007276 0 0.52780E-06 408089.8 3750026.3 33.6 3.70 5.35
2.89 YES
L0007277 0 0.52780E-06 408095.6 3750036.3 33.7 3.70 5.35
2.89 YES
L0007278 0 0.52780E-06 408101.3 3750046.2 33.8 3.70 5.35
2.89 YES
L0007279 0 0.52780E-06 408107.0 3750056.2 33.9 3.70 5.35
2.89 YES
L0007280 0 0.52780E-06 408112.8 3750066.1 34.0 3.70 5.35
2.89 YES
L0007281 0 0.52780E-06 408118.5 3750076.1 34.1 3.70 5.35
2.89 YES
L0007282 0 0.52780E-06 408124.3 3750086.1 34.2 3.70 5.35
2.89 YES
L0007283 0 0.52730E-06 407668.9 3748110.1 23.4 3.70 5.35
2.89 YES
L0007284 0 0.52730E-06 407668.8 3748121.6 23.4 3.70 5.35
2.89 YES
L0007285 0 0.52730E-06 407668.7 3748133.1 23.4 3.70 5.35

2.89 YES
L0007286 0 0.52730E-06 407668.7 3748144.6 23.4 3.70 5.35
2.89 YES
L0007287 0 0.52730E-06 407668.6 3748156.1 23.5 3.70 5.35
2.89 YES
L0007288 0 0.52730E-06 407668.6 3748167.6 23.5 3.70 5.35
2.89 YES
L0007289 0 0.52730E-06 407668.6 3748179.1 23.5 3.70 5.35
2.89 YES
L0007290 0 0.52730E-06 407668.6 3748190.6 23.5 3.70 5.35
2.89 YES
L0007291 0 0.52730E-06 407668.6 3748202.1 23.5 3.70 5.35
2.89 YES
L0007292 0 0.52730E-06 407668.6 3748213.6 23.5 3.70 5.35
2.89 YES
L0007293 0 0.52730E-06 407668.6 3748225.1 23.5 3.70 5.35
2.89 YES
L0007294 0 0.52730E-06 407668.6 3748236.6 23.5 3.70 5.35
2.89 YES
L0007295 0 0.52730E-06 407668.6 3748248.1 23.6 3.70 5.35
2.89 YES
L0007296 0 0.52730E-06 407668.6 3748259.6 23.6 3.70 5.35
2.89 YES
L0007297 0 0.52730E-06 407668.7 3748271.1 23.6 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007298	0	0.52730E-06	407668.7	3748282.6	23.6	3.70	5.35	2.89	YES	
L0007299	0	0.52730E-06	407668.7	3748294.1	23.6	3.70	5.35	2.89	YES	
L0007300	0	0.52730E-06	407668.7	3748305.6	23.6	3.70	5.35			

2.89 YES
L0007301 0 0.52730E-06 407668.7 3748317.1 23.6 3.70 5.35
2.89 YES
L0007302 0 0.52730E-06 407668.7 3748328.6 23.6 3.70 5.35
2.89 YES
L0007303 0 0.52730E-06 407668.8 3748340.1 23.6 3.70 5.35
2.89 YES
L0007304 0 0.52730E-06 407668.8 3748351.6 23.6 3.70 5.35
2.89 YES
L0007305 0 0.52730E-06 407668.8 3748363.1 23.6 3.70 5.35
2.89 YES
L0007306 0 0.52730E-06 407668.8 3748374.6 23.6 3.70 5.35
2.89 YES
L0007307 0 0.52730E-06 407668.8 3748386.1 23.6 3.70 5.35
2.89 YES
L0007308 0 0.52730E-06 407668.8 3748397.6 23.6 3.70 5.35
2.89 YES
L0007309 0 0.52730E-06 407668.9 3748409.1 23.6 3.70 5.35
2.89 YES
L0007310 0 0.52730E-06 407668.9 3748420.6 23.6 3.70 5.35
2.89 YES
L0007311 0 0.52730E-06 407668.9 3748432.1 23.5 3.70 5.35
2.89 YES
L0007312 0 0.52730E-06 407668.9 3748443.6 23.5 3.70 5.35
2.89 YES
L0007313 0 0.52730E-06 407668.9 3748455.1 23.5 3.70 5.35
2.89 YES
L0007314 0 0.52730E-06 407668.9 3748466.6 23.5 3.70 5.35
2.89 YES
L0007315 0 0.52730E-06 407669.0 3748478.1 23.5 3.70 5.35
2.89 YES
L0007316 0 0.52730E-06 407669.0 3748489.6 23.5 3.70 5.35
2.89 YES
L0007317 0 0.52730E-06 407669.0 3748501.1 23.5 3.70 5.35
2.89 YES
L0007318 0 0.52730E-06 407669.0 3748512.6 23.5 3.70 5.35
2.89 YES
L0007319 0 0.52730E-06 407669.0 3748524.1 23.5 3.70 5.35
2.89 YES
L0007320 0 0.52730E-06 407669.0 3748535.6 23.5 3.70 5.35
2.89 YES
L0007321 0 0.52730E-06 407669.1 3748547.1 23.5 3.70 5.35
2.89 YES
L0007322 0 0.52730E-06 407669.1 3748558.6 23.5 3.70 5.35
2.89 YES
L0007323 0 0.52730E-06 407669.1 3748570.1 23.5 3.70 5.35
2.89 YES
L0007324 0 0.52730E-06 407669.1 3748581.6 23.5 3.70 5.35
2.89 YES
L0007325 0 0.52730E-06 407669.1 3748593.1 23.6 3.70 5.35

2.89 YES
L0007326 0 0.52730E-06 407669.1 3748604.6 23.6 3.70 5.35
2.89 YES
L0007327 0 0.52730E-06 407669.1 3748616.1 23.6 3.70 5.35
2.89 YES
L0007328 0 0.52730E-06 407669.1 3748627.6 23.6 3.70 5.35
2.89 YES
L0007329 0 0.52730E-06 407669.1 3748639.1 23.7 3.70 5.35
2.89 YES
L0007330 0 0.52730E-06 407669.2 3748650.6 23.7 3.70 5.35
2.89 YES
L0007331 0 0.52730E-06 407669.4 3748662.1 23.7 3.70 5.35
2.89 YES
L0007332 0 0.52730E-06 407669.7 3748673.6 23.7 3.70 5.35
2.89 YES
L0007333 0 0.52730E-06 407669.9 3748685.1 23.7 3.70 5.35
2.89 YES
L0007334 0 0.52730E-06 407670.0 3748696.6 23.7 3.70 5.35
2.89 YES
L0007335 0 0.52730E-06 407670.0 3748708.1 23.7 3.70 5.35
2.89 YES
L0007336 0 0.52730E-06 407670.0 3748719.6 23.7 3.70 5.35
2.89 YES
L0007337 0 0.52730E-06 407670.0 3748731.1 23.7 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007338	0	0.52730E-06	407670.0	3748742.6	23.7	3.70	5.35	2.89	YES	
L0007339	0	0.52730E-06	407670.0	3748754.1	23.7	3.70	5.35	2.89	YES	
L0007340	0	0.52730E-06	407670.0	3748765.6	23.7	3.70	5.35			

2.89 YES
L0007341 0 0.52730E-06 407670.0 3748777.1 23.7 3.70 5.35
2.89 YES
L0007342 0 0.52730E-06 407670.0 3748788.6 23.6 3.70 5.35
2.89 YES
L0007343 0 0.52730E-06 407670.0 3748800.1 23.6 3.70 5.35
2.89 YES
L0007344 0 0.52730E-06 407670.0 3748811.6 23.6 3.70 5.35
2.89 YES
L0007345 0 0.52730E-06 407670.0 3748823.1 23.6 3.70 5.35
2.89 YES
L0007346 0 0.52730E-06 407670.0 3748834.6 23.6 3.70 5.35
2.89 YES
L0007347 0 0.52730E-06 407670.0 3748846.1 23.5 3.70 5.35
2.89 YES
L0007348 0 0.52730E-06 407670.0 3748857.6 23.5 3.70 5.35
2.89 YES
L0007349 0 0.52730E-06 407670.0 3748869.1 23.5 3.70 5.35
2.89 YES
L0007350 0 0.52730E-06 407670.0 3748880.6 23.6 3.70 5.35
2.89 YES
L0007351 0 0.52730E-06 407670.1 3748892.1 23.6 3.70 5.35
2.89 YES
L0007352 0 0.52730E-06 407670.1 3748903.6 23.5 3.70 5.35
2.89 YES
L0007353 0 0.52730E-06 407670.1 3748915.1 23.5 3.70 5.35
2.89 YES
L0007354 0 0.52730E-06 407670.1 3748926.6 23.5 3.70 5.35
2.89 YES
L0007355 0 0.52730E-06 407670.1 3748938.1 23.5 3.70 5.35
2.89 YES
L0007356 0 0.52730E-06 407670.1 3748949.6 23.6 3.70 5.35
2.89 YES
L0007357 0 0.52730E-06 407670.1 3748961.1 23.7 3.70 5.35
2.89 YES
L0007358 0 0.52730E-06 407670.1 3748972.6 23.9 3.70 5.35
2.89 YES
L0007359 0 0.52730E-06 407670.1 3748984.1 24.1 3.70 5.35
2.89 YES
L0007360 0 0.52730E-06 407670.1 3748995.6 23.9 3.70 5.35
2.89 YES
L0007361 0 0.52730E-06 407670.1 3749007.1 23.9 3.70 5.35
2.89 YES
L0007362 0 0.52730E-06 407670.1 3749018.6 24.1 3.70 5.35
2.89 YES
L0007363 0 0.52730E-06 407670.1 3749030.1 24.0 3.70 5.35
2.89 YES
L0007364 0 0.52730E-06 407670.1 3749041.6 24.0 3.70 5.35
2.89 YES
L0007365 0 0.52730E-06 407670.1 3749053.1 24.0 3.70 5.35

2.89 YES
L0007366 0 0.52730E-06 407670.1 3749064.6 24.0 3.70 5.35
2.89 YES
L0007367 0 0.52730E-06 407670.1 3749076.1 24.0 3.70 5.35
2.89 YES
L0007368 0 0.52730E-06 407670.2 3749087.6 24.0 3.70 5.35
2.89 YES
L0007369 0 0.52730E-06 407670.2 3749099.1 24.1 3.70 5.35
2.89 YES
L0007370 0 0.52730E-06 407670.3 3749110.6 24.1 3.70 5.35
2.89 YES
L0007371 0 0.52730E-06 407670.3 3749122.1 24.1 3.70 5.35
2.89 YES
L0007372 0 0.52730E-06 407670.3 3749133.6 24.2 3.70 5.35
2.89 YES
L0007373 0 0.52730E-06 407670.4 3749145.1 24.2 3.70 5.35
2.89 YES
L0007374 0 0.52730E-06 407670.0 3749156.5 24.1 3.70 5.35
2.89 YES
L0007375 0 0.52730E-06 407669.4 3749168.0 24.0 3.70 5.35
2.89 YES
L0007376 0 0.52730E-06 407668.8 3749179.5 23.9 3.70 5.35
2.89 YES
L0007377 0 0.52730E-06 407668.2 3749191.0 23.7 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007378	0	0.52730E-06	407667.5	3749202.5	23.4	3.70	5.35	2.89	YES	
L0007379	0	0.52730E-06	407666.9	3749214.0	23.1	3.70	5.35	2.89	YES	
L0007380	0	0.52730E-06	407665.8	3749225.4	22.7	3.70	5.35			

2.89 YES
L0007381 0 0.52730E-06 407664.7 3749236.9 22.3 3.70 5.35
2.89 YES
L0007382 0 0.52730E-06 407663.6 3749248.3 21.8 3.70 5.35
2.89 YES
L0007383 0 0.52730E-06 407663.0 3749259.8 21.4 3.70 5.35
2.89 YES
L0007384 0 0.52730E-06 407662.6 3749271.3 21.1 3.70 5.35
2.89 YES
L0007385 0 0.52730E-06 407662.1 3749282.8 20.8 3.70 5.35
2.89 YES
L0007386 0 0.52730E-06 407661.7 3749294.3 20.6 3.70 5.35
2.89 YES
L0007387 0 0.52730E-06 407661.7 3749305.8 20.5 3.70 5.35
2.89 YES
L0007388 0 0.52730E-06 407661.7 3749317.3 20.6 3.70 5.35
2.89 YES
L0007389 0 0.52730E-06 407661.7 3749328.8 20.7 3.70 5.35
2.89 YES
L0007390 0 0.52730E-06 407661.7 3749340.3 20.8 3.70 5.35
2.89 YES
L0007391 0 0.52730E-06 407661.7 3749351.8 21.1 3.70 5.35
2.89 YES
L0007392 0 0.52730E-06 407662.3 3749363.2 21.4 3.70 5.35
2.89 YES
L0007393 0 0.52730E-06 407662.9 3749374.7 21.8 3.70 5.35
2.89 YES
L0007394 0 0.52730E-06 407663.3 3749386.2 22.4 3.70 5.35
2.89 YES
L0007395 0 0.52730E-06 407665.6 3749397.4 23.0 3.70 5.35
2.89 YES
L0007396 0 0.52730E-06 407668.5 3749408.6 23.6 3.70 5.35
2.89 YES
L0007397 0 0.52730E-06 407671.4 3749419.7 24.2 3.70 5.35
2.89 YES
L0007398 0 0.52730E-06 407674.3 3749430.8 24.8 3.70 5.35
2.89 YES
L0007399 0 0.52730E-06 407677.9 3749441.7 25.4 3.70 5.35
2.89 YES
L0007400 0 0.52730E-06 407681.7 3749452.6 25.9 3.70 5.35
2.89 YES
L0007401 0 0.52730E-06 407686.3 3749463.1 26.4 3.70 5.35
2.89 YES
L0007402 0 0.52730E-06 407691.2 3749473.5 26.8 3.70 5.35
2.89 YES
L0007403 0 0.52730E-06 407697.1 3749483.4 27.2 3.70 5.35
2.89 YES
L0007404 0 0.52730E-06 407703.2 3749493.1 27.4 3.70 5.35
2.89 YES
L0007405 0 0.52730E-06 407709.3 3749502.9 27.7 3.70 5.35

2.89 YES
L0007406 0 0.52730E-06 407715.8 3749512.3 27.9 3.70 5.35
2.89 YES
L0007407 0 0.52730E-06 407723.2 3749521.1 28.1 3.70 5.35
2.89 YES
L0007408 0 0.52730E-06 407730.6 3749529.9 28.2 3.70 5.35
2.89 YES
L0007409 0 0.52730E-06 407738.0 3749538.7 28.2 3.70 5.35
2.89 YES
L0007410 0 0.52730E-06 407745.6 3749547.4 28.3 3.70 5.35
2.89 YES
L0007411 0 0.52730E-06 407753.5 3749555.7 28.3 3.70 5.35
2.89 YES
L0007412 0 0.52730E-06 407761.5 3749564.0 28.3 3.70 5.35
2.89 YES
L0007413 0 0.52730E-06 407769.4 3749572.3 28.3 3.70 5.35
2.89 YES
L0007414 0 0.52730E-06 407777.6 3749580.4 28.3 3.70 5.35
2.89 YES
L0007415 0 0.52730E-06 407785.8 3749588.5 28.3 3.70 5.35
2.89 YES
L0007416 0 0.52730E-06 407794.0 3749596.6 28.3 3.70 5.35
2.89 YES
L0007417 0 0.52730E-06 407802.1 3749604.7 28.3 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE SCALAR VARY BY
L0007418	0	0.52730E-06	407809.6	3749613.4	28.3	3.70	5.35	2.89	YES
L0007419	0	0.52730E-06	407817.1	3749622.1	28.3	3.70	5.35	2.89	YES
L0007420	0	0.52730E-06	407824.6	3749630.8	28.4	3.70	5.35		

2.89 YES
L0007421 0 0.52730E-06 407832.1 3749639.6 28.4 3.70 5.35
2.89 YES
L0007422 0 0.52730E-06 407839.5 3749648.4 28.5 3.70 5.35
2.89 YES
L0007423 0 0.52730E-06 407846.9 3749657.1 28.6 3.70 5.35
2.89 YES
L0007424 0 0.52730E-06 407854.3 3749665.9 28.7 3.70 5.35
2.89 YES
L0007425 0 0.52730E-06 407860.7 3749675.5 28.7 3.70 5.35
2.89 YES
L0007426 0 0.52730E-06 407867.0 3749685.1 28.8 3.70 5.35
2.89 YES
L0007427 0 0.52730E-06 407873.4 3749694.7 28.9 3.70 5.35
2.89 YES
L0007428 0 0.52730E-06 407879.5 3749704.5 29.0 3.70 5.35
2.89 YES
L0007429 0 0.52730E-06 407885.6 3749714.2 29.1 3.70 5.35
2.89 YES
L0007430 0 0.52730E-06 407891.7 3749724.0 29.2 3.70 5.35
2.89 YES
L0007431 0 0.52730E-06 407897.4 3749733.9 29.4 3.70 5.35
2.89 YES
L0007432 0 0.52730E-06 407903.0 3749744.0 29.5 3.70 5.35
2.89 YES
L0007433 0 0.52730E-06 407908.9 3749753.9 29.6 3.70 5.35
2.89 YES
L0007434 0 0.52730E-06 407914.7 3749763.8 29.7 3.70 5.35
2.89 YES
L0007435 0 0.52730E-06 407920.5 3749773.7 29.8 3.70 5.35
2.89 YES
L0007436 0 0.52730E-06 407926.4 3749783.6 29.9 3.70 5.35
2.89 YES
L0007437 0 0.52730E-06 407932.3 3749793.4 29.9 3.70 5.35
2.89 YES
L0007438 0 0.52730E-06 407938.3 3749803.3 30.1 3.70 5.35
2.89 YES
L0007439 0 0.52730E-06 407944.2 3749813.1 30.1 3.70 5.35
2.89 YES
L0007440 0 0.52730E-06 407950.2 3749822.9 30.2 3.70 5.35
2.89 YES
L0007441 0 0.52730E-06 407956.1 3749832.8 30.3 3.70 5.35
2.89 YES
L0007442 0 0.52730E-06 407962.1 3749842.6 30.4 3.70 5.35
2.89 YES
L0007443 0 0.52730E-06 407968.1 3749852.5 30.5 3.70 5.35
2.89 YES
L0007444 0 0.52730E-06 407974.0 3749862.3 30.6 3.70 5.35
2.89 YES
L0007445 0 0.52730E-06 407979.9 3749872.2 30.8 3.70 5.35

2.89 YES
L0007446 0 0.52730E-06 407985.7 3749882.1 30.9 3.70 5.35
2.89 YES
L0007447 0 0.52730E-06 407991.6 3749892.0 31.1 3.70 5.35
2.89 YES
L0007448 0 0.52730E-06 407997.5 3749901.9 31.4 3.70 5.35
2.89 YES
L0007449 0 0.52730E-06 408003.3 3749911.8 31.6 3.70 5.35
2.89 YES
L0007450 0 0.52730E-06 408009.1 3749921.7 31.8 3.70 5.35
2.89 YES
L0007451 0 0.52730E-06 408014.9 3749931.6 32.0 3.70 5.35
2.89 YES
L0007452 0 0.52730E-06 408020.7 3749941.6 32.2 3.70 5.35
2.89 YES
L0007453 0 0.52730E-06 408026.6 3749951.5 32.4 3.70 5.35
2.89 YES
L0007454 0 0.52730E-06 408032.4 3749961.4 32.6 3.70 5.35
2.89 YES
L0007455 0 0.52730E-06 408038.3 3749971.3 32.8 3.70 5.35
2.89 YES
L0007456 0 0.52730E-06 408044.1 3749981.2 33.0 3.70 5.35
2.89 YES
L0007457 0 0.52730E-06 408050.0 3749991.1 33.1 3.70 5.35
2.89 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE SCALAR VARY BY
L0007458	0	0.52730E-06	408055.8	3750001.0	33.3	3.70	5.35	2.89	YES
L0007459	0	0.52730E-06	408061.7	3750010.9	33.4	3.70	5.35	2.89	YES
L0007460	0	0.52730E-06	408067.5	3750020.8	33.5	3.70	5.35		

```
2.89     YES
 L0007461         0   0.52730E-06  408073.4 3750030.7    33.6     3.70     5.35
2.89     YES
 L0007462         0   0.52730E-06  408079.1 3750040.6    33.7     3.70     5.35
2.89     YES
 L0007463         0   0.52730E-06  408084.9 3750050.6    33.8     3.70     5.35
2.89     YES
 L0007464         0   0.52730E-06  408090.6 3750060.6    33.9     3.70     5.35
2.89     YES
 L0007465         0   0.52730E-06  408096.4 3750070.5    34.0     3.70     5.35
2.89     YES
 L0007466         0   0.52730E-06  408102.2 3750080.4    34.0     3.70     5.35
2.89     YES
 L0007467         0   0.52730E-06  408108.0 3750090.3    34.1     3.70     5.35
2.89     YES
 *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                          ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                         ***       15:02:46

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                              SOURCE IDs
 -----------                                              ----------


  ALL        L0007098    , L0007099    , L0007100    , L0007101    , L0007102    ,
L0007103    , L0007104    , L0007105    ,

             L0007106    , L0007107    , L0007108    , L0007109    , L0007110    ,
L0007111    , L0007112    , L0007113    ,

             L0007114    , L0007115    , L0007116    , L0007117    , L0007118    ,
L0007119    , L0007120    , L0007121    ,

             L0007122    , L0007123    , L0007124    , L0007125    , L0007126    ,
L0007127    , L0007128    , L0007129    ,

             L0007130    , L0007131    , L0007132    , L0007133    , L0007134    ,
L0007135    , L0007136    , L0007137    ,

             L0007138    , L0007139    , L0007140    , L0007141    , L0007142    ,
L0007143    , L0007144    , L0007145    ,

             L0007146    , L0007147    , L0007148    , L0007149    , L0007150    ,
L0007151    , L0007152    , L0007153    ,
```

```
             L0007154    , L0007155    , L0007156    , L0007157    , L0007158    ,
L0007159    , L0007160    , L0007161    ,

             L0007162    , L0007163    , L0007164    , L0007165    , L0007166    ,
L0007167    , L0007168    , L0007169    ,

             L0007170    , L0007171    , L0007172    , L0007173    , L0007174    ,
L0007175    , L0007176    , L0007177    ,

             L0007178    , L0007179    , L0007180    , L0007181    , L0007182    ,
L0007183    , L0007184    , L0007185    ,

             L0007186    , L0007187    , L0007188    , L0007189    , L0007190    ,
L0007191    , L0007192    , L0007193    ,

             L0007194    , L0007195    , L0007196    , L0007197    , L0007198    ,
L0007199    , L0007200    , L0007201    ,

             L0007202    , L0007203    , L0007204    , L0007205    , L0007206    ,
L0007207    , L0007208    , L0007209    ,

             L0007210    , L0007211    , L0007212    , L0007213    , L0007214    ,
L0007215    , L0007216    , L0007217    ,

             L0007218    , L0007219    , L0007220    , L0007221    , L0007222    ,
L0007223    , L0007224    , L0007225    ,

             L0007226    , L0007227    , L0007228    , L0007229    , L0007230    ,
L0007231    , L0007232    , L0007233    ,

             L0007234    , L0007235    , L0007236    , L0007237    , L0007238    ,
L0007239    , L0007240    , L0007241    ,

             L0007242    , L0007243    , L0007244    , L0007245    , L0007246    ,
L0007247    , L0007248    , L0007249    ,

             L0007250    , L0007251    , L0007252    , L0007253    , L0007254    ,
L0007255    , L0007256    , L0007257    ,
 *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                           ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                           ***       15:02:46

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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                *** SOURCE IDs DEFINING SOURCE GROUPS ***
```

SRCGROUP ID	SOURCE IDs
	L0007258 , L0007259 , L0007260 , L0007261 , L0007262 , L0007263 , L0007264 , L0007265 ,
	L0007266 , L0007267 , L0007268 , L0007269 , L0007270 , L0007271 , L0007272 , L0007273 ,
	L0007274 , L0007275 , L0007276 , L0007277 , L0007278 , L0007279 , L0007280 , L0007281 ,
	L0007282 , L0007283 , L0007284 , L0007285 , L0007286 , L0007287 , L0007288 , L0007289 ,
	L0007290 , L0007291 , L0007292 , L0007293 , L0007294 , L0007295 , L0007296 , L0007297 ,
	L0007298 , L0007299 , L0007300 , L0007301 , L0007302 , L0007303 , L0007304 , L0007305 ,
	L0007306 , L0007307 , L0007308 , L0007309 , L0007310 , L0007311 , L0007312 , L0007313 ,
	L0007314 , L0007315 , L0007316 , L0007317 , L0007318 , L0007319 , L0007320 , L0007321 ,
	L0007322 , L0007323 , L0007324 , L0007325 , L0007326 , L0007327 , L0007328 , L0007329 ,
	L0007330 , L0007331 , L0007332 , L0007333 , L0007334 , L0007335 , L0007336 , L0007337 ,
	L0007338 , L0007339 , L0007340 , L0007341 , L0007342 , L0007343 , L0007344 , L0007345 ,
	L0007346 , L0007347 , L0007348 , L0007349 , L0007350 , L0007351 , L0007352 , L0007353 ,
	L0007354 , L0007355 , L0007356 , L0007357 , L0007358 , L0007359 , L0007360 , L0007361 ,
	L0007362 , L0007363 , L0007364 , L0007365 , L0007366 , L0007367 , L0007368 , L0007369 ,
	L0007370 , L0007371 , L0007372 , L0007373 , L0007374 , L0007375 , L0007376 , L0007377 ,
	L0007378 , L0007379 , L0007380 , L0007381 , L0007382 ,

L0007383   , L0007384   , L0007385   ,

             L0007386   , L0007387   , L0007388   , L0007389   , L0007390   ,
L0007391   , L0007392   , L0007393   ,

             L0007394   , L0007395   , L0007396   , L0007397   , L0007398   ,
L0007399   , L0007400   , L0007401   ,

             L0007402   , L0007403   , L0007404   , L0007405   , L0007406   ,
L0007407   , L0007408   , L0007409   ,

             L0007410   , L0007411   , L0007412   , L0007413   , L0007414   ,
L0007415   , L0007416   , L0007417   ,

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

             L0007418   , L0007419   , L0007420   , L0007421   , L0007422   ,
L0007423   , L0007424   , L0007425   ,

             L0007426   , L0007427   , L0007428   , L0007429   , L0007430   ,
L0007431   , L0007432   , L0007433   ,

             L0007434   , L0007435   , L0007436   , L0007437   , L0007438   ,
L0007439   , L0007440   , L0007441   ,

             L0007442   , L0007443   , L0007444   , L0007445   , L0007446   ,
L0007447   , L0007448   , L0007449   ,

             L0007450   , L0007451   , L0007452   , L0007453   , L0007454   ,
L0007455   , L0007456   , L0007457   ,

             L0007458   , L0007459   , L0007460   , L0007461   , L0007462   ,
L0007463   , L0007464   , L0007465   ,

             L0007466   , L0007467   ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	83011.	L0007098 , L0007099 , L0007100 , L0007101 , L0007102 , L0007103 , L0007104 , L0007105 ,
		L0007106 , L0007107 , L0007108 , L0007109 , L0007110 , L0007111 , L0007112 , L0007113 ,
		L0007114 , L0007115 , L0007116 , L0007117 , L0007118 , L0007119 , L0007120 , L0007121 ,
		L0007122 , L0007123 , L0007124 , L0007125 , L0007126 , L0007127 , L0007128 , L0007129 ,
		L0007130 , L0007131 , L0007132 , L0007133 , L0007134 , L0007135 , L0007136 , L0007137 ,
		L0007138 , L0007139 , L0007140 , L0007141 , L0007142 , L0007143 , L0007144 , L0007145 ,
		L0007146 , L0007147 , L0007148 , L0007149 , L0007150 , L0007151 , L0007152 , L0007153 ,
		L0007154 , L0007155 , L0007156 , L0007157 , L0007158 , L0007159 , L0007160 , L0007161 ,
		L0007162 , L0007163 , L0007164 , L0007165 , L0007166 , L0007167 , L0007168 , L0007169 ,
		L0007170 , L0007171 , L0007172 , L0007173 , L0007174 , L0007175 , L0007176 , L0007177 ,
		L0007178 , L0007179 , L0007180 , L0007181 , L0007182 , L0007183 , L0007184 , L0007185 ,
		L0007186 , L0007187 , L0007188 , L0007189 , L0007190 , L0007191 , L0007192 , L0007193 ,

L0007194 , L0007195 , L0007196 , L0007197 , L0007198 ,
L0007199 , L0007200 , L0007201 ,

L0007202 , L0007203 , L0007204 , L0007205 , L0007206 ,
L0007207 , L0007208 , L0007209 ,

L0007210 , L0007211 , L0007212 , L0007213 , L0007214 ,
L0007215 , L0007216 , L0007217 ,

L0007218 , L0007219 , L0007220 , L0007221 , L0007222 ,
L0007223 , L0007224 , L0007225 ,

L0007226 , L0007227 , L0007228 , L0007229 , L0007230 ,
L0007231 , L0007232 , L0007233 ,

L0007234 , L0007235 , L0007236 , L0007237 , L0007238 ,
L0007239 , L0007240 , L0007241 ,

L0007242 , L0007243 , L0007244 , L0007245 , L0007246 ,
L0007247 , L0007248 , L0007249 ,

L0007250 , L0007251 , L0007252 , L0007253 , L0007254 ,
L0007255 , L0007256 , L0007257 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0007258 , L0007259 , L0007260 , L0007261 , L0007262 ,
L0007263 , L0007264 , L0007265 ,

L0007266 , L0007267 , L0007268 , L0007269 , L0007270 ,
L0007271 , L0007272 , L0007273 ,

L0007274 , L0007275 , L0007276 , L0007277 , L0007278 ,
L0007279 , L0007280 , L0007281 ,

L0007282 , L0007283 , L0007284 , L0007285 , L0007286 ,
L0007287 , L0007288 , L0007289 ,

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L0007295    , L0007296    , L0007297    ,

             L0007298    , L0007299    , L0007300    , L0007301    , L0007302    ,
L0007303    , L0007304    , L0007305    ,

             L0007306    , L0007307    , L0007308    , L0007309    , L0007310    ,
L0007311    , L0007312    , L0007313    ,

             L0007314    , L0007315    , L0007316    , L0007317    , L0007318    ,
L0007319    , L0007320    , L0007321    ,

             L0007322    , L0007323    , L0007324    , L0007325    , L0007326    ,
L0007327    , L0007328    , L0007329    ,

             L0007330    , L0007331    , L0007332    , L0007333    , L0007334    ,
L0007335    , L0007336    , L0007337    ,

             L0007338    , L0007339    , L0007340    , L0007341    , L0007342    ,
L0007343    , L0007344    , L0007345    ,

             L0007346    , L0007347    , L0007348    , L0007349    , L0007350    ,
L0007351    , L0007352    , L0007353    ,

             L0007354    , L0007355    , L0007356    , L0007357    , L0007358    ,
L0007359    , L0007360    , L0007361    ,

             L0007362    , L0007363    , L0007364    , L0007365    , L0007366    ,
L0007367    , L0007368    , L0007369    ,

             L0007370    , L0007371    , L0007372    , L0007373    , L0007374    ,
L0007375    , L0007376    , L0007377    ,

             L0007378    , L0007379    , L0007380    , L0007381    , L0007382    ,
L0007383    , L0007384    , L0007385    ,

             L0007386    , L0007387    , L0007388    , L0007389    , L0007390    ,
L0007391    , L0007392    , L0007393    ,

             L0007394    , L0007395    , L0007396    , L0007397    , L0007398    ,
L0007399    , L0007400    , L0007401    ,

             L0007402    , L0007403    , L0007404    , L0007405    , L0007406    ,
L0007407    , L0007408    , L0007409    ,

             L0007410    , L0007411    , L0007412    , L0007413    , L0007414    ,
L0007415    , L0007416    , L0007417    ,
↟ *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                           ***        12/12/22
```

*** SOURCE IDs DEFINED AS URBAN SOURCES
***

URBAN ID	URBAN POP	SOURCE IDs

L0007418 , L0007419 , L0007420 , L0007421 , L0007422 , L0007423 , L0007424 , L0007425 ,

L0007426 , L0007427 , L0007428 , L0007429 , L0007430 , L0007431 , L0007432 , L0007433 ,

L0007434 , L0007435 , L0007436 , L0007437 , L0007438 , L0007439 , L0007440 , L0007441 ,

L0007442 , L0007443 , L0007444 , L0007445 , L0007446 , L0007447 , L0007448 , L0007449 ,

L0007450 , L0007451 , L0007452 , L0007453 , L0007454 , L0007455 , L0007456 , L0007457 ,

L0007458 , L0007459 , L0007460 , L0007461 , L0007462 , L0007463 , L0007464 , L0007465 ,

L0007466 , L0007467 ,

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART
***

*** X-COORDINATES OF GRID ***
(METERS)

407508.5, 407518.5, 407528.5, 407538.5, 407548.5, 407558.5, 407568.5,

407578.5, 407588.5, 407598.5,
       407608.5, 407618.5,

                                        *** Y-COORDINATES OF GRID ***
                                                (METERS)

      3749082.9, 3749092.9, 3749102.9, 3749112.9,

                                    *** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART
***

                                                * ELEVATION HEIGHTS IN METERS *

    Y-COORD | X-COORD (METERS)
    (METERS) | 407508.53   407518.53   407528.53   407538.53   407548.53
407558.53   407568.53   407578.53   407588.53
 -
- -

  3749112.90 | 23.30   23.40   23.40   23.30   23.30
   23.30   23.40   23.40   23.50
  3749102.90 | 23.30   23.30   23.30   23.30   23.30
   23.40   23.40   23.30   23.60
  3749092.90 | 21.90   22.40   22.80   23.10   23.30
   23.50   23.50   23.40   23.50
  3749082.90 | 20.00   20.20   20.60   21.40   22.30
   23.20   23.60   23.60   23.70

                                    *** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART
***

                                                * ELEVATION HEIGHTS IN METERS *

    Y-COORD | X-COORD (METERS)
    (METERS) | 407598.53   407608.53   407618.53
 -

```
  3749112.90 |         23.60        23.50        23.70
  3749102.90 |         23.80        23.60        23.70
  3749092.90 |         23.70        23.60        23.80
  3749082.90 |         23.70        23.70        23.90
```



```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                            *** METEOROLOGICAL DAYS SELECTED FOR
PROCESSING ***
                                                               (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON
WHAT IS INCLUDED IN THE DATA FILE.



                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED
CATEGORIES ***
                                                            (METERS/SEC)

                                               1.54,   3.09,   5.14,   8.23,
10.80,
```

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: Met Data\KFUL_V9_ADJU\KFUL_v9.SFC
Met Version: 16216
Profile file: Met Data\KFUL_V9_ADJU\KFUL_v9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3166 Name: FULLERTON_AIRPORT Year: 2012
Upper air station no.: 3190 Name: UNKNOWN Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-4.8	0.098	-9.000	-9.000	-999.	74.	18.0	0.26	2.61	1.00	0.96	322.	10.1	283.8	2.0
12	01	01	1	02	-1.9	0.072	-9.000	-9.000	-999.	47.	18.0	0.26	2.61	1.00	0.52	13.	10.1	283.1	2.0
12	01	01	1	03	-3.1	0.083	-9.000	-9.000	-999.	57.	16.3	0.26	2.61	1.00	0.75	73.	10.1	282.0	2.0
12	01	01	1	04	-4.3	0.094	-9.000	-9.000	-999.	69.	17.3	0.26	2.61	1.00	0.91	98.	10.1	281.4	2.0
12	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.26	2.61	1.00	0.00	0.	10.1	280.9	2.0
12	01	01	1	06	-2.1	0.074	-9.000	-9.000	-999.	48.	17.6	0.26	2.61	1.00	0.55	80.	10.1	280.4	2.0
12	01	01	1	07	-2.8	0.080	-9.000	-9.000	-999.	54.	16.3	0.26	2.61	1.00	0.69	201.	10.1	280.4	2.0
12	01	01	1	08	-1.5	0.066	-9.000	-9.000	-999.	41.	17.0	0.26	2.61	0.54	0.52	72.	10.1	280.9	2.0
12	01	01	1	09	37.4	-9.000	-9.000	-9.000	38.	-999.	-99999.0	0.26	2.61	0.31	0.00	0.	10.1	285.9	2.0
12	01	01	1	10	109.1	0.151	0.713	0.008	121.	141.	-2.9	0.26	2.61	0.24	0.79	268.	10.1	289.9	2.0
12	01	01	1	11	160.5	0.148	1.143	0.005	338.	136.	-1.8	0.26	2.61	0.21	0.70	273.	10.1	294.2	2.0
12	01	01	1	12	186.9	0.156	1.483	0.005	634.	148.	-1.8	0.26	2.61	0.20	0.74	230.	10.1	297.5	2.0
12	01	01	1	13	187.4	0.210	1.777	0.005	1088.	231.	-4.5	0.26	2.61	0.20	1.20	227.	10.1	300.4	2.0
12	01	01	1	14	160.3	0.235	1.833	0.005	1395.	274.	-7.4	0.26	2.61						

```
0.21    1.47  233.   10.1  300.9    2.0
 12 01 01   1 15  109.1  0.197  1.662  0.005 1527.  210.     -6.3  0.26   2.61
0.25    1.20  233.   10.1  302.0    2.0
 12 01 01   1 16   33.3  0.243  1.125  0.005 1548.  288.    -39.2  0.26   2.61
0.33    1.91  229.   10.1  298.1    2.0
 12 01 01   1 17   -9.1  0.141 -9.000 -9.000 -999.  132.     28.3  0.26   2.61
0.60    1.37  212.   10.1  294.2    2.0
 12 01 01   1 18   -4.3  0.094 -9.000 -9.000 -999.   69.     17.5  0.26   2.61
1.00    0.91  190.   10.1  292.0    2.0
 12 01 01   1 19   -2.8  0.079 -9.000 -9.000 -999.   54.     16.3  0.26   2.61
1.00    0.70  302.   10.1  289.2    2.0
 12 01 01   1 20   -4.0  0.091 -9.000 -9.000 -999.   65.     17.0  0.26   2.61
1.00    0.87  338.   10.1  288.1    2.0
 12 01 01   1 21   -6.3  0.113 -9.000 -9.000 -999.   91.     20.5  0.26   2.61
1.00    1.11  304.   10.1  287.0    2.0
 12 01 01   1 22   -3.1  0.082 -9.000 -9.000 -999.   57.     16.3  0.26   2.61
1.00    0.75   76.   10.1  285.4    2.0
 12 01 01   1 23   -2.4  0.076 -9.000 -9.000 -999.   50.     16.7  0.26   2.61
1.00    0.62  306.   10.1  284.9    2.0
 12 01 01   1 24   -3.6  0.087 -9.000 -9.000 -999.   62.     16.6  0.26   2.61
1.00    0.82  318.   10.1  283.8    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01   10.1 1  322.    0.96   283.8   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                           ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                          ***       15:02:46

                                    PAGE  25
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                *** THE PERIOD ( 43848 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL       ***
                                    INCLUDING SOURCE(S):     L0007098    , L0007099
, L0007100    , L0007101    , L0007102    ,
                  L0007103    , L0007104    , L0007105    , L0007106    , L0007107
, L0007108    , L0007109    , L0007110    ,
                  L0007111    , L0007112    , L0007113    , L0007114    , L0007115
, L0007116    , L0007117    , L0007118    ,
                  L0007119    , L0007120    , L0007121    , L0007122    , L0007123
, L0007124    , L0007125    ,  . . .      ,

                                     *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***
```

```
                                    ** CONC OF PM_10    IN MICROGRAMS/M**3
                  **

    Y-COORD  |                                                 X-COORD (METERS)
    (METERS) |     407508.53    407518.53    407528.53    407538.53    407548.53
407558.53    407568.53    407578.53    407588.53
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -

  3749112.90 |       0.00158      0.00167      0.00177      0.00188      0.00200
 0.00215      0.00232      0.00251      0.00275
  3749102.90 |       0.00158      0.00167      0.00177      0.00188      0.00200
 0.00215      0.00231      0.00251      0.00275
  3749092.90 |       0.00157      0.00166      0.00176      0.00187      0.00200
 0.00215      0.00231      0.00251      0.00274
  3749082.90 |       0.00155      0.00164      0.00174      0.00186      0.00199
 0.00214      0.00231      0.00251      0.00275
↟ *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                         ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                        ***        15:02:46

                                    PAGE  26
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                *** THE PERIOD ( 43848 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL       ***
                                    INCLUDING SOURCE(S):     L0007098    , L0007099
, L0007100    , L0007101    , L0007102    ,
                   L0007103    , L0007104    , L0007105    , L0007106    , L0007107
, L0007108    , L0007109    , L0007110    ,
                   L0007111    , L0007112    , L0007113    , L0007114    , L0007115
, L0007116    , L0007117    , L0007118    ,
                   L0007119    , L0007120    , L0007121    , L0007122    , L0007123
, L0007124    , L0007125    ,  . . .      ,

                                     *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***

                                    ** CONC OF PM_10    IN MICROGRAMS/M**3
                  **

    Y-COORD  |                                                 X-COORD (METERS)
    (METERS) |     407598.53    407608.53    407618.53
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -

  3749112.90 |       0.00303      0.00338      0.00384
  3749102.90 |       0.00303      0.00338      0.00384
  3749092.90 |       0.00303      0.00338      0.00384
```

                              *** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL   ***
                                  INCLUDING SOURCE(S):   L0007098   , L0007099
, L0007100   , L0007101   , L0007102   ,
                 L0007103   , L0007104   , L0007105   , L0007106   , L0007107
, L0007108   , L0007109   , L0007110   ,
                 L0007111   , L0007112   , L0007113   , L0007114   , L0007115
, L0007116   , L0007117   , L0007118   ,
                 L0007119   , L0007120   , L0007121   , L0007122   , L0007123
, L0007124   , L0007125   , . . .   ,

                                   *** NETWORK ID: ONSITE   ; NETWORK TYPE:
GRIDCART ***

                                        ** CONC OF PM_10   IN MICROGRAMS/M**3
                  **

  Y-COORD | X-COORD (METERS)
  (METERS) | 407508.53   407518.53   407528.53
      407538.53   407548.53
 -
- -

 3749112.9 | 0.00451 (15021808)   0.00471 (15021808)   0.00493 (15021808)
     0.00515 (15021808)   0.00543 (16112908)
 3749102.9 | 0.00450 (15021808)   0.00469 (15021808)   0.00490 (15021808)
     0.00514 (16112908)   0.00542 (16112908)
 3749092.9 | 0.00446 (15021808)   0.00466 (15021808)   0.00487 (15021808)
     0.00513 (16112908)   0.00541 (16112908)
 3749082.9 | 0.00438 (15021808)   0.00456 (15021808)   0.00478 (16112908)
     0.00506 (16112908)   0.00536 (16112908)

                              *** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL   ***

```
                                  INCLUDING SOURCE(S):     L0007098    , L0007099
, L0007100    , L0007101    , L0007102    ,
                  L0007103    , L0007104    , L0007105    , L0007106    , L0007107
, L0007108    , L0007109    , L0007110    ,
                  L0007111    , L0007112    , L0007113    , L0007114    , L0007115
, L0007116    , L0007117    , L0007118    ,
                  L0007119    , L0007120    , L0007121    , L0007122    , L0007123
, L0007124    , L0007125    ,  . . .      ,

                                   *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***

                                        ** CONC OF PM_10    IN MICROGRAMS/M**3
                  **

  Y-COORD  |                                                  X-COORD (METERS)
  (METERS) |       407558.53               407568.53              407578.53
      407588.53              407598.53
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -

 3749112.9 |      0.00575 (16112908)      0.00609 (16112908)      0.00647 (16112908)
     0.00690 (16112908)      0.00739 (16112908)
 3749102.9 |      0.00573 (16112908)      0.00607 (16112908)      0.00643 (16112908)
     0.00687 (16112908)      0.00736 (12061706)
 3749092.9 |      0.00571 (16112908)      0.00605 (16112908)      0.00641 (16112908)
     0.00683 (16112908)      0.00736 (12061706)
 3749082.9 |      0.00569 (16112908)      0.00602 (16112908)      0.00639 (16112908)
     0.00680 (16112908)      0.00735 (12061706)
↟ *** AERMOD - VERSION 21112  ***   *** Beach Blvd DPM_
                          ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                         ***       15:02:46

                                  PAGE  29
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                  INCLUDING SOURCE(S):     L0007098    , L0007099
, L0007100    , L0007101    , L0007102    ,
                  L0007103    , L0007104    , L0007105    , L0007106    , L0007107
, L0007108    , L0007109    , L0007110    ,
                  L0007111    , L0007112    , L0007113    , L0007114    , L0007115
, L0007116    , L0007117    , L0007118    ,
                  L0007119    , L0007120    , L0007121    , L0007122    , L0007123
, L0007124    , L0007125    ,  . . .      ,

                                   *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***
```

** CONC OF PM_10 IN MICROGRAMS/M**3 **

Y-COORD (METERS)	X-COORD (METERS) 407608.53	407618.53
3749112.9	0.00819 (12061706)	0.00927 (12061706)
3749102.9	0.00819 (12061706)	0.00927 (12061706)
3749092.9	0.00819 (12061706)	0.00926 (12061706)
3749082.9	0.00819 (12061706)	0.00927 (12061706)

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID		NETWORK AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.00385 AT	(407618.53, 3749082.90, 23.90, 23.90, 0.00)	GC	ONSITE
	2ND HIGHEST VALUE IS	0.00384 AT	(407618.53, 3749092.90, 23.80, 23.80, 0.00)	GC	ONSITE
	3RD HIGHEST VALUE IS	0.00384 AT	(407618.53, 3749112.90, 23.70, 23.70, 0.00)	GC	ONSITE
	4TH HIGHEST VALUE IS	0.00384 AT	(407618.53, 3749102.90, 23.70, 23.70, 0.00)	GC	ONSITE
	5TH HIGHEST VALUE IS	0.00338 AT	(407608.53, 3749082.90, 23.70, 23.70, 0.00)	GC	ONSITE
	6TH HIGHEST VALUE IS	0.00338 AT	(407608.53, 3749102.90, 23.60, 23.60, 0.00)	GC	ONSITE
	7TH HIGHEST VALUE IS	0.00338 AT	(407608.53, 3749112.90, 23.50, 23.50, 0.00)	GC	ONSITE
	8TH HIGHEST VALUE IS	0.00338 AT	(407608.53, 3749092.90, 23.60,		

23.60,   0.00) GC ONSITE
       9TH HIGHEST VALUE IS   0.00303 AT (407598.53, 3749102.90,   23.80,
23.80,   0.00) GC ONSITE
      10TH HIGHEST VALUE IS   0.00303 AT (407598.53, 3749112.90,   23.60,
23.60,   0.00) GC ONSITE

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                *** THE SUMMARY OF HIGHEST 1-HR
RESULTS ***

                                    ** CONC OF PM_10   IN MICROGRAMS/M**3
             **

                                                        DATE
                                         NETWORK
GROUP ID   AVERAGE CONC   (YYMMDDHH)   RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)   OF TYPE GRID-ID
- -
- -

ALL   HIGH   1ST HIGH VALUE IS   0.00927 ON 12061706: AT (407618.53,
3749112.90,   23.70,   23.70,   0.00) GC ONSITE

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

 *** Message Summary : AERMOD Model Execution ***

```
 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of         2285 Informational Message(s)

A Total of        43848 Hours Were Processed

A Total of         1588 Calm Hours Identified

A Total of          697 Missing Hours Identified (  1.59 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186     891       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
    0.50
ME W187     891       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


   ***********************************
   *** AERMOD Finishes Successfully ***
   ***********************************
```

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 12/12/2022
** File: C:\Lakes\AERMOD View\Projects\Craig Apartments Project\TOG Run\Craig
Apartments Project_TOG\Craig Apartments Project_TOG.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE Beach Blvd TOG_
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 83011 Buena_Park
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL "Craig Apartments Project_TOG.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ----------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = BB_NB
** DESCRSRC Beach Blvd NB
** PREFIX
** Length of Side = 11.50
** Configuration = Adjacent
** Emission Rate = 0.0096419751
** Vertical Dimension = 1.19
** SZINIT = 0.55
** Nodes = 24
** 407682.702, 3748098.341, 23.38, 0.60, 5.35
** 407683.285, 3748215.487, 23.55, 0.60, 5.35
** 407685.616, 3748379.258, 23.54, 0.60, 5.35
```

```
** 407683.889, 3748465.625, 23.52, 0.60, 5.35
** 407685.206, 3748651.394, 23.67, 0.60, 5.35
** 407684.767, 3748667.316, 23.70, 0.60, 5.35
** 407685.243, 3749001.029, 24.00, 0.60, 5.35
** 407685.560, 3749174.020, 24.03, 0.60, 5.35
** 407683.790, 3749203.516, 23.47, 0.60, 5.35
** 407677.187, 3749288.553, 20.86, 0.60, 5.35
** 407679.303, 3749345.240, 20.71, 0.60, 5.35
** 407681.876, 3749378.682, 22.02, 0.60, 5.35
** 407688.219, 3749407.131, 23.21, 0.60, 5.35
** 407697.450, 3749438.210, 24.87, 0.60, 5.35
** 407723.146, 3749486.513, 26.98, 0.60, 5.35
** 407740.985, 3749514.387, 27.74, 0.60, 5.35
** 407757.116, 3749534.036, 27.95, 0.60, 5.35
** 407837.144, 3749616.598, 29.13, 0.60, 5.35
** 407872.807, 3749660.025, 29.38, 0.60, 5.35
** 407886.095, 3749678.616, 29.58, 0.60, 5.35
** 407905.732, 3749706.585, 29.68, 0.60, 5.35
** 407935.332, 3749756.484, 29.80, 0.60, 5.35
** 408020.912, 3749906.830, 31.55, 0.60, 5.35
** 408128.422, 3750093.248, 34.17, 0.60, 5.35
** ------------------------------------------------------------------
   LOCATION L0007468     VOLUME   407682.731 3748104.091 23.37
   LOCATION L0007469     VOLUME   407682.788 3748115.591 23.38
   LOCATION L0007470     VOLUME   407682.845 3748127.091 23.40
   LOCATION L0007471     VOLUME   407682.902 3748138.591 23.41
   LOCATION L0007472     VOLUME   407682.959 3748150.091 23.44
   LOCATION L0007473     VOLUME   407683.017 3748161.591 23.47
   LOCATION L0007474     VOLUME   407683.074 3748173.091 23.53
   LOCATION L0007475     VOLUME   407683.131 3748184.590 23.54
   LOCATION L0007476     VOLUME   407683.188 3748196.090 23.54
   LOCATION L0007477     VOLUME   407683.246 3748207.590 23.56
   LOCATION L0007478     VOLUME   407683.336 3748219.090 23.56
   LOCATION L0007479     VOLUME   407683.500 3748230.589 23.55
   LOCATION L0007480     VOLUME   407683.664 3748242.087 23.56
   LOCATION L0007481     VOLUME   407683.827 3748253.586 23.58
   LOCATION L0007482     VOLUME   407683.991 3748265.085 23.59
   LOCATION L0007483     VOLUME   407684.155 3748276.584 23.59
   LOCATION L0007484     VOLUME   407684.318 3748288.083 23.58
   LOCATION L0007485     VOLUME   407684.482 3748299.582 23.57
   LOCATION L0007486     VOLUME   407684.646 3748311.080 23.59
   LOCATION L0007487     VOLUME   407684.809 3748322.579 23.59
   LOCATION L0007488     VOLUME   407684.973 3748334.078 23.58
   LOCATION L0007489     VOLUME   407685.137 3748345.577 23.56
   LOCATION L0007490     VOLUME   407685.300 3748357.076 23.56
   LOCATION L0007491     VOLUME   407685.464 3748368.575 23.58
   LOCATION L0007492     VOLUME   407685.600 3748380.073 23.57
   LOCATION L0007493     VOLUME   407685.370 3748391.571 23.59
   LOCATION L0007494     VOLUME   407685.140 3748403.069 23.59
   LOCATION L0007495     VOLUME   407684.910 3748414.566 23.58
```

LOCATION L0007496 VOLUME 407684.680 3748426.064 23.58
LOCATION L0007497 VOLUME 407684.450 3748437.562 23.57
LOCATION L0007498 VOLUME 407684.220 3748449.060 23.56
LOCATION L0007499 VOLUME 407683.991 3748460.557 23.57
LOCATION L0007500 VOLUME 407683.935 3748472.056 23.56
LOCATION L0007501 VOLUME 407684.016 3748483.556 23.54
LOCATION L0007502 VOLUME 407684.098 3748495.055 23.53
LOCATION L0007503 VOLUME 407684.179 3748506.555 23.52
LOCATION L0007504 VOLUME 407684.261 3748518.055 23.51
LOCATION L0007505 VOLUME 407684.342 3748529.555 23.51
LOCATION L0007506 VOLUME 407684.424 3748541.054 23.51
LOCATION L0007507 VOLUME 407684.505 3748552.554 23.51
LOCATION L0007508 VOLUME 407684.587 3748564.054 23.50
LOCATION L0007509 VOLUME 407684.668 3748575.553 23.52
LOCATION L0007510 VOLUME 407684.750 3748587.053 23.53
LOCATION L0007511 VOLUME 407684.831 3748598.553 23.56
LOCATION L0007512 VOLUME 407684.913 3748610.053 23.63
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** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = BB_SB
** DESCRSRC Beach Blvd SB
** PREFIX
** Length of Side = 11.50
** Configuration = Adjacent
** Emission Rate = 0.0096320163
** Vertical Dimension = 1.19
** SZINIT = 0.55
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   LOCATION L0007799     VOLUME   407885.564 3749714.218 29.11
   LOCATION L0007800     VOLUME   407891.659 3749723.970 29.23
   LOCATION L0007801     VOLUME   407897.383 3749733.942 29.35
   LOCATION L0007802     VOLUME   407903.016 3749743.967 29.47
   LOCATION L0007803     VOLUME   407908.856 3749753.874 29.58
   LOCATION L0007804     VOLUME   407914.695 3749763.781 29.68
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   LOCATION L0007806     VOLUME   407926.375 3749783.595 29.87
   LOCATION L0007807     VOLUME   407932.321 3749793.439 29.95
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   LOCATION L0007822     VOLUME   408020.723 3749941.560 32.23
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   LOCATION L0007824     VOLUME   408032.422 3749961.363 32.62
   LOCATION L0007825     VOLUME   408038.272 3749971.264 32.81
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   LOCATION L0007827     VOLUME   408049.971 3749991.066 33.14
   LOCATION L0007828     VOLUME   408055.820 3750000.967 33.31
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   LOCATION L0007831     VOLUME   408073.369 3750030.671 33.63
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   LOCATION L0007834     VOLUME   408090.610 3750060.553 33.93
   LOCATION L0007835     VOLUME   408096.352 3750070.517 34.00
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** Source Parameters **
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SRCPARAM L0007713     0.000052065      0.60      5.35      0.55
SRCPARAM L0007714     0.000052065      0.60      5.35      0.55
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SRCPARAM L0007716     0.000052065      0.60      5.35      0.55
SRCPARAM L0007717     0.000052065      0.60      5.35      0.55
SRCPARAM L0007718     0.000052065      0.60      5.35      0.55
SRCPARAM L0007719     0.000052065      0.60      5.35      0.55
SRCPARAM L0007720     0.000052065      0.60      5.35      0.55
SRCPARAM L0007721     0.000052065      0.60      5.35      0.55
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   SRCPARAM L0007834     0.000052065      0.60      5.35      0.55
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   SRCPARAM L0007837     0.000052065      0.60      5.35      0.55
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   SRCGROUP ALL
SO FINISHED
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** AERMOD Receptor Pathway
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RE STARTING
   INCLUDED "Craig Apartments Project_TOG.rou"
RE FINISHED
**
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** AERMOD Meteorology Pathway
**************************************
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ME STARTING
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   PROFFILE "Met Data\KFUL_V9_ADJU\KFUL_v9.PFL"
   SURFDATA 3166 2012 Fullerton_Airport
   UAIRDATA 3190 2012
   PROFBASE 29.0 METERS
ME FINISHED
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** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
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   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "CRAIG APARTMENTS PROJECT_TOG.AD\01H1GALL.PLT" 31
   PLOTFILE PERIOD ALL "CRAIG APARTMENTS PROJECT_TOG.AD\PE00GALL.PLT" 32
   SUMMFILE "Craig Apartments Project_TOG.sum"
OU FINISHED
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** Project Parameters
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** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     11
** ZONEINX  0
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** Lakes Environmental AERMOD MPI
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** AERMOD Input Produced by:
** AERMOD View Ver. 11.0.1
** Lakes Environmental Software Inc.
** Date: 12/12/2022
** File: C:\Lakes\AERMOD View\Projects\Craig Apartments Project\TOG Run\Craig
Apartments Project_TOG\Craig Apartments Project_TOG.ADI
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**
**************************************
** AERMOD Control Pathway
**************************************
**
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CO STARTING
   TITLEONE Beach Blvd TOG_
   MODELOPT DFAULT CONC
   AVERTIME 1 PERIOD
   URBANOPT 83011 Buena_Park
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL "Craig Apartments Project_TOG.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
** ------------------------------------------------------------------------
** Line Source Represented by Adjacent Volume Sources
** LINE VOLUME Source ID = BB_NB
** DESCRSRC Beach Blvd NB
** PREFIX
** Length of Side = 11.50
** Configuration = Adjacent
** Emission Rate = 0.0096419751
** Vertical Dimension = 1.19
** SZINIT = 0.55
** Nodes = 24
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** 407683.285, 3748215.487, 23.55, 0.60, 5.35
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** 407685.560, 3749174.020, 24.03, 0.60, 5.35
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** 407688.219, 3749407.131, 23.21, 0.60, 5.35
** 407697.450, 3749438.210, 24.87, 0.60, 5.35
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** 407740.985, 3749514.387, 27.74, 0.60, 5.35
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   LOCATION L0007470     VOLUME   407682.845 3748127.091 23.40
   LOCATION L0007471     VOLUME   407682.902 3748138.591 23.41
   LOCATION L0007472     VOLUME   407682.959 3748150.091 23.44
   LOCATION L0007473     VOLUME   407683.017 3748161.591 23.47
   LOCATION L0007474     VOLUME   407683.074 3748173.091 23.53
   LOCATION L0007475     VOLUME   407683.131 3748184.590 23.54
   LOCATION L0007476     VOLUME   407683.188 3748196.090 23.54
   LOCATION L0007477     VOLUME   407683.246 3748207.590 23.56
   LOCATION L0007478     VOLUME   407683.336 3748219.090 23.56
   LOCATION L0007479     VOLUME   407683.500 3748230.589 23.55
   LOCATION L0007480     VOLUME   407683.664 3748242.087 23.56
   LOCATION L0007481     VOLUME   407683.827 3748253.586 23.58
   LOCATION L0007482     VOLUME   407683.991 3748265.085 23.59
   LOCATION L0007483     VOLUME   407684.155 3748276.584 23.59
   LOCATION L0007484     VOLUME   407684.318 3748288.083 23.58
   LOCATION L0007485     VOLUME   407684.482 3748299.582 23.57
   LOCATION L0007486     VOLUME   407684.646 3748311.080 23.59
   LOCATION L0007487     VOLUME   407684.809 3748322.579 23.59
   LOCATION L0007488     VOLUME   407684.973 3748334.078 23.58
   LOCATION L0007489     VOLUME   407685.137 3748345.577 23.56
   LOCATION L0007490     VOLUME   407685.300 3748357.076 23.56
   LOCATION L0007491     VOLUME   407685.464 3748368.575 23.58
   LOCATION L0007492     VOLUME   407685.600 3748380.073 23.57
   LOCATION L0007493     VOLUME   407685.370 3748391.571 23.59
   LOCATION L0007494     VOLUME   407685.140 3748403.069 23.59
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LOCATION L0007505 VOLUME 407684.342 3748529.555 23.51
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LOCATION L0007511 VOLUME 407684.831 3748598.553 23.56
LOCATION L0007512 VOLUME 407684.913 3748610.053 23.63
LOCATION L0007513 VOLUME 407684.994 3748621.552 23.62
LOCATION L0007514 VOLUME 407685.076 3748633.052 23.62
LOCATION L0007515 VOLUME 407685.157 3748644.552 23.64
LOCATION L0007516 VOLUME 407685.077 3748656.050 23.67
LOCATION L0007517 VOLUME 407684.767 3748667.545 23.68
LOCATION L0007518 VOLUME 407684.784 3748679.045 23.68
LOCATION L0007519 VOLUME 407684.800 3748690.545 23.67
LOCATION L0007520 VOLUME 407684.817 3748702.045 23.66
LOCATION L0007521 VOLUME 407684.833 3748713.545 23.64
LOCATION L0007522 VOLUME 407684.850 3748725.045 23.64
LOCATION L0007523 VOLUME 407684.866 3748736.545 23.62
LOCATION L0007524 VOLUME 407684.882 3748748.045 23.61
LOCATION L0007525 VOLUME 407684.899 3748759.545 23.60
LOCATION L0007526 VOLUME 407684.915 3748771.045 23.58
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LOCATION L0007531 VOLUME 407684.997 3748828.545 23.51
LOCATION L0007532 VOLUME 407685.014 3748840.045 23.48
LOCATION L0007533 VOLUME 407685.030 3748851.545 23.48
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LOCATION L0007535 VOLUME 407685.063 3748874.545 23.52
LOCATION L0007536 VOLUME 407685.079 3748886.045 23.53
LOCATION L0007537 VOLUME 407685.096 3748897.545 23.52
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LOCATION L0007540 VOLUME 407685.145 3748932.045 23.52
LOCATION L0007541 VOLUME 407685.161 3748943.545 23.57
LOCATION L0007542 VOLUME 407685.178 3748955.045 23.69
LOCATION L0007543 VOLUME 407685.194 3748966.545 23.83
LOCATION L0007544 VOLUME 407685.211 3748978.045 23.99

LOCATION L0007545 VOLUME 407685.227 3748989.545 24.05
LOCATION L0007546 VOLUME 407685.243 3749001.045 24.02
LOCATION L0007547 VOLUME 407685.264 3749012.545 24.09
LOCATION L0007548 VOLUME 407685.286 3749024.045 24.04
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LOCATION L0007554 VOLUME 407685.412 3749093.045 24.04
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LOCATION L0007570 VOLUME 407678.101 3749276.771 20.81
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LOCATION L0007577 VOLUME 407680.220 3749357.161 20.77
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LOCATION L0007586 VOLUME 407707.006 3749456.173 25.83
LOCATION L0007587 VOLUME 407712.407 3749466.326 26.25
LOCATION L0007588 VOLUME 407717.808 3749476.479 26.61
LOCATION L0007589 VOLUME 407723.219 3749486.626 26.93
LOCATION L0007590 VOLUME 407729.418 3749496.312 27.22
LOCATION L0007591 VOLUME 407735.617 3749505.999 27.49
LOCATION L0007592 VOLUME 407741.963 3749515.578 27.69
LOCATION L0007593 VOLUME 407749.260 3749524.466 27.85
LOCATION L0007594 VOLUME 407756.556 3749533.355 27.95

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LOCATION L0007596 VOLUME 407772.510 3749549.918 28.05
LOCATION L0007597 VOLUME 407780.514 3749558.175 28.11
LOCATION L0007598 VOLUME 407788.519 3749566.433 28.19
LOCATION L0007599 VOLUME 407796.523 3749574.690 28.30
LOCATION L0007600 VOLUME 407804.527 3749582.948 28.46
LOCATION L0007601 VOLUME 407812.531 3749591.205 28.65
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LOCATION L0007605 VOLUME 407843.894 3749624.817 29.07
LOCATION L0007606 VOLUME 407851.193 3749633.705 29.14
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LOCATION L0007612 VOLUME 407893.042 3749688.511 29.50
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LOCATION L0007617 VOLUME 407923.801 3749737.045 29.79
LOCATION L0007618 VOLUME 407929.668 3749746.936 29.80
LOCATION L0007619 VOLUME 407935.529 3749756.830 29.82
LOCATION L0007620 VOLUME 407941.218 3749766.824 29.85
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LOCATION L0007633 VOLUME 408015.174 3749896.750 31.38
LOCATION L0007634 VOLUME 408020.863 3749906.745 31.59
LOCATION L0007635 VOLUME 408026.608 3749916.707 31.80
LOCATION L0007636 VOLUME 408032.353 3749926.669 32.03
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LOCATION L0007640 VOLUME 408055.334 3749966.517 32.79
LOCATION L0007641 VOLUME 408061.079 3749976.479 32.97
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LOCATION L0007644 VOLUME 408078.315 3750006.365 33.38

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   LOCATION L0007647     VOLUME   408095.551 3750036.251 33.73
   LOCATION L0007648     VOLUME   408101.296 3750046.213 33.81
   LOCATION L0007649     VOLUME   408107.041 3750056.176 33.91
   LOCATION L0007650     VOLUME   408112.787 3750066.138 34.01
   LOCATION L0007651     VOLUME   408118.532 3750076.100 34.08
   LOCATION L0007652     VOLUME   408124.277 3750086.062 34.16
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** LINE VOLUME Source ID = BB_SB
** DESCRSRC Beach Blvd SB
** PREFIX
** Length of Side = 11.50
** Configuration = Adjacent
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** Vertical Dimension = 1.19
** SZINIT = 0.55
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LOCATION L0007779 VOLUME 407737.999 3749538.749 28.22
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LOCATION L0007786 VOLUME 407793.963 3749596.573 28.29
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LOCATION L0007789 VOLUME 407817.131 3749622.102 28.34
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LOCATION L0007791 VOLUME 407832.083 3749639.579 28.45
LOCATION L0007792 VOLUME 407839.506 3749648.362 28.53
LOCATION L0007793 VOLUME 407846.929 3749657.146 28.60
LOCATION L0007794 VOLUME 407854.327 3749665.948 28.66
LOCATION L0007795 VOLUME 407860.673 3749675.538 28.72

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** End of LINE VOLUME Source ID = BB_SB
** Source Parameters **
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   SRCPARAM L0007472     0.0000521188      0.60      5.35      0.55
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SRCPARAM L0007476     0.0000521188      0.60      5.35      0.55
SRCPARAM L0007477     0.0000521188      0.60      5.35      0.55
SRCPARAM L0007478     0.0000521188      0.60      5.35      0.55
SRCPARAM L0007479     0.0000521188      0.60      5.35      0.55
SRCPARAM L0007480     0.0000521188      0.60      5.35      0.55
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SRCPARAM L0007482     0.0000521188      0.60      5.35      0.55
SRCPARAM L0007483     0.0000521188      0.60      5.35      0.55
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SRCPARAM L0007783     0.000052065      0.60      5.35      0.55
SRCPARAM L0007784     0.000052065      0.60      5.35      0.55
SRCPARAM L0007785     0.000052065      0.60      5.35      0.55
SRCPARAM L0007786     0.000052065      0.60      5.35      0.55
SRCPARAM L0007787     0.000052065      0.60      5.35      0.55
SRCPARAM L0007788     0.000052065      0.60      5.35      0.55
SRCPARAM L0007789     0.000052065      0.60      5.35      0.55
SRCPARAM L0007790     0.000052065      0.60      5.35      0.55
SRCPARAM L0007791     0.000052065      0.60      5.35      0.55
SRCPARAM L0007792     0.000052065      0.60      5.35      0.55
SRCPARAM L0007793     0.000052065      0.60      5.35      0.55
SRCPARAM L0007794     0.000052065      0.60      5.35      0.55
SRCPARAM L0007795     0.000052065      0.60      5.35      0.55
SRCPARAM L0007796     0.000052065      0.60      5.35      0.55
SRCPARAM L0007797     0.000052065      0.60      5.35      0.55
SRCPARAM L0007798     0.000052065      0.60      5.35      0.55
SRCPARAM L0007799     0.000052065      0.60      5.35      0.55
SRCPARAM L0007800     0.000052065      0.60      5.35      0.55
SRCPARAM L0007801     0.000052065      0.60      5.35      0.55
SRCPARAM L0007802     0.000052065      0.60      5.35      0.55
SRCPARAM L0007803     0.000052065      0.60      5.35      0.55
SRCPARAM L0007804     0.000052065      0.60      5.35      0.55
SRCPARAM L0007805     0.000052065      0.60      5.35      0.55
SRCPARAM L0007806     0.000052065      0.60      5.35      0.55
SRCPARAM L0007807     0.000052065      0.60      5.35      0.55
SRCPARAM L0007808     0.000052065      0.60      5.35      0.55
SRCPARAM L0007809     0.000052065      0.60      5.35      0.55
SRCPARAM L0007810     0.000052065      0.60      5.35      0.55
SRCPARAM L0007811     0.000052065      0.60      5.35      0.55
SRCPARAM L0007812     0.000052065      0.60      5.35      0.55
SRCPARAM L0007813     0.000052065      0.60      5.35      0.55
SRCPARAM L0007814     0.000052065      0.60      5.35      0.55
SRCPARAM L0007815     0.000052065      0.60      5.35      0.55
SRCPARAM L0007816     0.000052065      0.60      5.35      0.55
SRCPARAM L0007817     0.000052065      0.60      5.35      0.55
SRCPARAM L0007818     0.000052065      0.60      5.35      0.55
SRCPARAM L0007819     0.000052065      0.60      5.35      0.55
SRCPARAM L0007820     0.000052065      0.60      5.35      0.55
```

```
   SRCPARAM L0007821     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007822     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007823     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007824     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007825     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007826     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007827     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007828     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007829     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007830     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007831     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007832     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007833     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007834     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007835     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007836     0.000052065      0.60      5.35      0.55
   SRCPARAM L0007837     0.000052065      0.60      5.35      0.55
** ----------------------------------------------------------------------
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED "Craig Apartments Project_TOG.rou"
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE "Met Data\KFUL_V9_ADJU\KFUL_v9.SFC"
   PROFFILE "Met Data\KFUL_V9_ADJU\KFUL_v9.PFL"
   SURFDATA 3166 2012 Fullerton_Airport
   UAIRDATA 3190 2012
   PROFBASE 29.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
```

```
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST "CRAIG APARTMENTS PROJECT_TOG.AD\01H1GALL.PLT" 31
   PLOTFILE PERIOD ALL "CRAIG APARTMENTS PROJECT_TOG.AD\PE00GALL.PLT" 32
   SUMMFILE "Craig Apartments Project_TOG.sum"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            2 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W186     891       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
     0.50
 ME W187     891       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

 *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                           ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                           ***        15:25:42

                                    PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                              ***     MODEL SETUP OPTIONS SUMMARY
 ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
```

```
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for   370 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =     83011.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        ADJ_U*   - Use ADJ_U* option for SBL in AERMET
        CCVR_Sub - Meteorological data includes CCVR substitutions
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM_10

 **Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates PERIOD Averages

 **This Run Includes:    370 Source(s);       1 Source Group(s); and      48
Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
                 and:    370 VOLUME source(s)
                 and:      0 AREA type source(s)
                 and:      0 LINE source(s)
                 and:      0 RLINE/RLINEXT source(s)
                 and:      0 OPENPIT source(s)
                 and:      0 BUOYANT LINE source(s) with a total of     0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  16216

 **Output Options Selected:
          Model Outputs Tables of PERIOD Averages by Receptor
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE
Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE
Keyword)
```

Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 29.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ;
Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.7 MB of RAM.

**Input Runstream File: aermod.inp

**Output Print File: aermod.out

**Detailed Error/Message File: Craig Apartments Project_TOG.err

**File for Summary of Results: Craig Apartments Project_TOG.sum

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007468	0	0.52119E-04	407682.7	3748104.1	23.4	0.60	5.35	0.55	YES	
L0007469	0	0.52119E-04	407682.8	3748115.6	23.4	0.60	5.35	0.55	YES	
L0007470	0	0.52119E-04	407682.8	3748127.1	23.4	0.60	5.35			

0.55 YES
L0007471 0 0.52119E-04 407682.9 3748138.6 23.4 0.60 5.35
0.55 YES
L0007472 0 0.52119E-04 407683.0 3748150.1 23.4 0.60 5.35
0.55 YES
L0007473 0 0.52119E-04 407683.0 3748161.6 23.5 0.60 5.35
0.55 YES
L0007474 0 0.52119E-04 407683.1 3748173.1 23.5 0.60 5.35
0.55 YES
L0007475 0 0.52119E-04 407683.1 3748184.6 23.5 0.60 5.35
0.55 YES
L0007476 0 0.52119E-04 407683.2 3748196.1 23.5 0.60 5.35
0.55 YES
L0007477 0 0.52119E-04 407683.2 3748207.6 23.6 0.60 5.35
0.55 YES
L0007478 0 0.52119E-04 407683.3 3748219.1 23.6 0.60 5.35
0.55 YES
L0007479 0 0.52119E-04 407683.5 3748230.6 23.6 0.60 5.35
0.55 YES
L0007480 0 0.52119E-04 407683.7 3748242.1 23.6 0.60 5.35
0.55 YES
L0007481 0 0.52119E-04 407683.8 3748253.6 23.6 0.60 5.35
0.55 YES
L0007482 0 0.52119E-04 407684.0 3748265.1 23.6 0.60 5.35
0.55 YES
L0007483 0 0.52119E-04 407684.2 3748276.6 23.6 0.60 5.35
0.55 YES
L0007484 0 0.52119E-04 407684.3 3748288.1 23.6 0.60 5.35
0.55 YES
L0007485 0 0.52119E-04 407684.5 3748299.6 23.6 0.60 5.35
0.55 YES
L0007486 0 0.52119E-04 407684.6 3748311.1 23.6 0.60 5.35
0.55 YES
L0007487 0 0.52119E-04 407684.8 3748322.6 23.6 0.60 5.35
0.55 YES
L0007488 0 0.52119E-04 407685.0 3748334.1 23.6 0.60 5.35
0.55 YES
L0007489 0 0.52119E-04 407685.1 3748345.6 23.6 0.60 5.35
0.55 YES
L0007490 0 0.52119E-04 407685.3 3748357.1 23.6 0.60 5.35
0.55 YES
L0007491 0 0.52119E-04 407685.5 3748368.6 23.6 0.60 5.35
0.55 YES
L0007492 0 0.52119E-04 407685.6 3748380.1 23.6 0.60 5.35
0.55 YES
L0007493 0 0.52119E-04 407685.4 3748391.6 23.6 0.60 5.35
0.55 YES
L0007494 0 0.52119E-04 407685.1 3748403.1 23.6 0.60 5.35
0.55 YES
L0007495 0 0.52119E-04 407684.9 3748414.6 23.6 0.60 5.35

0.55   YES
 L0007496   0   0.52119E-04 407684.7 3748426.1   23.6   0.60   5.35
0.55   YES
 L0007497   0   0.52119E-04 407684.5 3748437.6   23.6   0.60   5.35
0.55   YES
 L0007498   0   0.52119E-04 407684.2 3748449.1   23.6   0.60   5.35
0.55   YES
 L0007499   0   0.52119E-04 407684.0 3748460.6   23.6   0.60   5.35
0.55   YES
 L0007500   0   0.52119E-04 407683.9 3748472.1   23.6   0.60   5.35
0.55   YES
 L0007501   0   0.52119E-04 407684.0 3748483.6   23.5   0.60   5.35
0.55   YES
 L0007502   0   0.52119E-04 407684.1 3748495.1   23.5   0.60   5.35
0.55   YES
 L0007503   0   0.52119E-04 407684.2 3748506.6   23.5   0.60   5.35
0.55   YES
 L0007504   0   0.52119E-04 407684.3 3748518.1   23.5   0.60   5.35
0.55   YES
 L0007505   0   0.52119E-04 407684.3 3748529.6   23.5   0.60   5.35
0.55   YES
 L0007506   0   0.52119E-04 407684.4 3748541.1   23.5   0.60   5.35
0.55   YES
 L0007507   0   0.52119E-04 407684.5 3748552.6   23.5   0.60   5.35
0.55   YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

NUMBER EMISSION RATE   BASE   RELEASE   INIT.
INIT.   URBAN EMISSION RATE
SOURCE   PART. (GRAMS/SEC)   X   Y   ELEV.   HEIGHT   SY
SZ   SOURCE SCALAR VARY
ID   CATS.   (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)   BY
- -

 L0007508   0   0.52119E-04 407684.6 3748564.1   23.5   0.60   5.35
0.55   YES
 L0007509   0   0.52119E-04 407684.7 3748575.6   23.5   0.60   5.35
0.55   YES
 L0007510   0   0.52119E-04 407684.8 3748587.1   23.5   0.60   5.35

0.55 YES
L0007511 0 0.52119E-04 407684.8 3748598.6 23.6 0.60 5.35
0.55 YES
L0007512 0 0.52119E-04 407684.9 3748610.1 23.6 0.60 5.35
0.55 YES
L0007513 0 0.52119E-04 407685.0 3748621.6 23.6 0.60 5.35
0.55 YES
L0007514 0 0.52119E-04 407685.1 3748633.1 23.6 0.60 5.35
0.55 YES
L0007515 0 0.52119E-04 407685.2 3748644.6 23.6 0.60 5.35
0.55 YES
L0007516 0 0.52119E-04 407685.1 3748656.0 23.7 0.60 5.35
0.55 YES
L0007517 0 0.52119E-04 407684.8 3748667.5 23.7 0.60 5.35
0.55 YES
L0007518 0 0.52119E-04 407684.8 3748679.0 23.7 0.60 5.35
0.55 YES
L0007519 0 0.52119E-04 407684.8 3748690.5 23.7 0.60 5.35
0.55 YES
L0007520 0 0.52119E-04 407684.8 3748702.0 23.7 0.60 5.35
0.55 YES
L0007521 0 0.52119E-04 407684.8 3748713.5 23.6 0.60 5.35
0.55 YES
L0007522 0 0.52119E-04 407684.8 3748725.0 23.6 0.60 5.35
0.55 YES
L0007523 0 0.52119E-04 407684.9 3748736.5 23.6 0.60 5.35
0.55 YES
L0007524 0 0.52119E-04 407684.9 3748748.0 23.6 0.60 5.35
0.55 YES
L0007525 0 0.52119E-04 407684.9 3748759.5 23.6 0.60 5.35
0.55 YES
L0007526 0 0.52119E-04 407684.9 3748771.0 23.6 0.60 5.35
0.55 YES
L0007527 0 0.52119E-04 407684.9 3748782.5 23.6 0.60 5.35
0.55 YES
L0007528 0 0.52119E-04 407684.9 3748794.0 23.6 0.60 5.35
0.55 YES
L0007529 0 0.52119E-04 407685.0 3748805.5 23.5 0.60 5.35
0.55 YES
L0007530 0 0.52119E-04 407685.0 3748817.0 23.5 0.60 5.35
0.55 YES
L0007531 0 0.52119E-04 407685.0 3748828.5 23.5 0.60 5.35
0.55 YES
L0007532 0 0.52119E-04 407685.0 3748840.0 23.5 0.60 5.35
0.55 YES
L0007533 0 0.52119E-04 407685.0 3748851.5 23.5 0.60 5.35
0.55 YES
L0007534 0 0.52119E-04 407685.0 3748863.0 23.5 0.60 5.35
0.55 YES
L0007535 0 0.52119E-04 407685.1 3748874.5 23.5 0.60 5.35

0.55 YES
L0007536 0 0.52119E-04 407685.1 3748886.0 23.5 0.60 5.35
0.55 YES
L0007537 0 0.52119E-04 407685.1 3748897.5 23.5 0.60 5.35
0.55 YES
L0007538 0 0.52119E-04 407685.1 3748909.0 23.5 0.60 5.35
0.55 YES
L0007539 0 0.52119E-04 407685.1 3748920.5 23.5 0.60 5.35
0.55 YES
L0007540 0 0.52119E-04 407685.1 3748932.0 23.5 0.60 5.35
0.55 YES
L0007541 0 0.52119E-04 407685.2 3748943.5 23.6 0.60 5.35
0.55 YES
L0007542 0 0.52119E-04 407685.2 3748955.0 23.7 0.60 5.35
0.55 YES
L0007543 0 0.52119E-04 407685.2 3748966.5 23.8 0.60 5.35
0.55 YES
L0007544 0 0.52119E-04 407685.2 3748978.0 24.0 0.60 5.35
0.55 YES
L0007545 0 0.52119E-04 407685.2 3748989.5 24.1 0.60 5.35
0.55 YES
L0007546 0 0.52119E-04 407685.2 3749001.0 24.0 0.60 5.35
0.55 YES
L0007547 0 0.52119E-04 407685.3 3749012.5 24.1 0.60 5.35
0.55 YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007548	0	0.52119E-04	407685.3	3749024.0	24.0	0.60	5.35	0.55	YES	
L0007549	0	0.52119E-04	407685.3	3749035.5	23.9	0.60	5.35	0.55	YES	
L0007550	0	0.52119E-04	407685.3	3749047.0	23.9	0.60	5.35			

0.55 YES
L0007551 0 0.52119E-04 407685.3 3749058.5 23.9 0.60 5.35
0.55 YES
L0007552 0 0.52119E-04 407685.4 3749070.0 24.0 0.60 5.35
0.55 YES
L0007553 0 0.52119E-04 407685.4 3749081.5 24.0 0.60 5.35
0.55 YES
L0007554 0 0.52119E-04 407685.4 3749093.0 24.0 0.60 5.35
0.55 YES
L0007555 0 0.52119E-04 407685.4 3749104.5 24.1 0.60 5.35
0.55 YES
L0007556 0 0.52119E-04 407685.5 3749116.0 24.1 0.60 5.35
0.55 YES
L0007557 0 0.52119E-04 407685.5 3749127.5 24.1 0.60 5.35
0.55 YES
L0007558 0 0.52119E-04 407685.5 3749139.0 24.2 0.60 5.35
0.55 YES
L0007559 0 0.52119E-04 407685.5 3749150.5 24.2 0.60 5.35
0.55 YES
L0007560 0 0.52119E-04 407685.5 3749162.0 24.1 0.60 5.35
0.55 YES
L0007561 0 0.52119E-04 407685.6 3749173.5 23.9 0.60 5.35
0.55 YES
L0007562 0 0.52119E-04 407684.9 3749185.0 23.8 0.60 5.35
0.55 YES
L0007563 0 0.52119E-04 407684.2 3749196.5 23.6 0.60 5.35
0.55 YES
L0007564 0 0.52119E-04 407683.4 3749208.0 23.3 0.60 5.35
0.55 YES
L0007565 0 0.52119E-04 407682.6 3749219.4 23.0 0.60 5.35
0.55 YES
L0007566 0 0.52119E-04 407681.7 3749230.9 22.6 0.60 5.35
0.55 YES
L0007567 0 0.52119E-04 407680.8 3749242.4 22.2 0.60 5.35
0.55 YES
L0007568 0 0.52119E-04 407679.9 3749253.8 21.7 0.60 5.35
0.55 YES
L0007569 0 0.52119E-04 407679.0 3749265.3 21.2 0.60 5.35
0.55 YES
L0007570 0 0.52119E-04 407678.1 3749276.8 20.8 0.60 5.35
0.55 YES
L0007571 0 0.52119E-04 407677.2 3749288.2 20.6 0.60 5.35
0.55 YES
L0007572 0 0.52119E-04 407677.6 3749299.7 20.4 0.60 5.35
0.55 YES
L0007573 0 0.52119E-04 407678.0 3749311.2 20.4 0.60 5.35
0.55 YES
L0007574 0 0.52119E-04 407678.5 3749322.7 20.3 0.60 5.35
0.55 YES
L0007575 0 0.52119E-04 407678.9 3749334.2 20.3 0.60 5.35

0.55 YES
L0007576 0 0.52119E-04 407679.3 3749345.7 20.4 0.60 5.35
0.55 YES
L0007577 0 0.52119E-04 407680.2 3749357.2 20.8 0.60 5.35
0.55 YES
L0007578 0 0.52119E-04 407681.1 3749368.6 21.2 0.60 5.35
0.55 YES
L0007579 0 0.52119E-04 407682.2 3749380.1 21.7 0.60 5.35
0.55 YES
L0007580 0 0.52119E-04 407684.7 3749391.3 22.3 0.60 5.35
0.55 YES
L0007581 0 0.52119E-04 407687.2 3749402.5 22.8 0.60 5.35
0.55 YES
L0007582 0 0.52119E-04 407690.1 3749413.6 23.6 0.60 5.35
0.55 YES
L0007583 0 0.52119E-04 407693.4 3749424.6 24.3 0.60 5.35
0.55 YES
L0007584 0 0.52119E-04 407696.7 3749435.7 24.8 0.60 5.35
0.55 YES
L0007585 0 0.52119E-04 407701.6 3749446.0 25.4 0.60 5.35
0.55 YES
L0007586 0 0.52119E-04 407707.0 3749456.2 25.8 0.60 5.35
0.55 YES
L0007587 0 0.52119E-04 407712.4 3749466.3 26.2 0.60 5.35
0.55 YES

*** VOLUME SOURCE DATA ***

NUMBER EMISSION RATE BASE RELEASE INIT.
INIT. URBAN EMISSION RATE
SOURCE PART. (GRAMS/SEC) X Y ELEV. HEIGHT SY
SZ SOURCE SCALAR VARY
ID CATS. (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS) BY
- -
- - - - - - - - - - - - - - - - - - - -

L0007588 0 0.52119E-04 407717.8 3749476.5 26.6 0.60 5.35
0.55 YES
L0007589 0 0.52119E-04 407723.2 3749486.6 26.9 0.60 5.35
0.55 YES
L0007590 0 0.52119E-04 407729.4 3749496.3 27.2 0.60 5.35

0.55 YES
L0007591 0 0.52119E-04 407735.6 3749506.0 27.5 0.60 5.35
0.55 YES
L0007592 0 0.52119E-04 407742.0 3749515.6 27.7 0.60 5.35
0.55 YES
L0007593 0 0.52119E-04 407749.3 3749524.5 27.9 0.60 5.35
0.55 YES
L0007594 0 0.52119E-04 407756.6 3749533.4 27.9 0.60 5.35
0.55 YES
L0007595 0 0.52119E-04 407764.5 3749541.7 28.0 0.60 5.35
0.55 YES
L0007596 0 0.52119E-04 407772.5 3749549.9 28.1 0.60 5.35
0.55 YES
L0007597 0 0.52119E-04 407780.5 3749558.2 28.1 0.60 5.35
0.55 YES
L0007598 0 0.52119E-04 407788.5 3749566.4 28.2 0.60 5.35
0.55 YES
L0007599 0 0.52119E-04 407796.5 3749574.7 28.3 0.60 5.35
0.55 YES
L0007600 0 0.52119E-04 407804.5 3749582.9 28.5 0.60 5.35
0.55 YES
L0007601 0 0.52119E-04 407812.5 3749591.2 28.7 0.60 5.35
0.55 YES
L0007602 0 0.52119E-04 407820.5 3749599.5 28.8 0.60 5.35
0.55 YES
L0007603 0 0.52119E-04 407828.5 3749607.7 28.9 0.60 5.35
0.55 YES
L0007604 0 0.52119E-04 407836.5 3749616.0 29.0 0.60 5.35
0.55 YES
L0007605 0 0.52119E-04 407843.9 3749624.8 29.1 0.60 5.35
0.55 YES
L0007606 0 0.52119E-04 407851.2 3749633.7 29.1 0.60 5.35
0.55 YES
L0007607 0 0.52119E-04 407858.5 3749642.6 29.2 0.60 5.35
0.55 YES
L0007608 0 0.52119E-04 407865.8 3749651.5 29.2 0.60 5.35
0.55 YES
L0007609 0 0.52119E-04 407873.1 3749660.4 29.3 0.60 5.35
0.55 YES
L0007610 0 0.52119E-04 407879.8 3749669.7 29.4 0.60 5.35
0.55 YES
L0007611 0 0.52119E-04 407886.4 3749679.1 29.4 0.60 5.35
0.55 YES
L0007612 0 0.52119E-04 407893.0 3749688.5 29.5 0.60 5.35
0.55 YES
L0007613 0 0.52119E-04 407899.6 3749697.9 29.6 0.60 5.35
0.55 YES
L0007614 0 0.52119E-04 407906.2 3749707.4 29.7 0.60 5.35
0.55 YES
L0007615 0 0.52119E-04 407912.1 3749717.3 29.7 0.60 5.35

0.55 YES
L0007616 0 0.52119E-04 407917.9 3749727.2 29.7 0.60 5.35
0.55 YES
L0007617 0 0.52119E-04 407923.8 3749737.0 29.8 0.60 5.35
0.55 YES
L0007618 0 0.52119E-04 407929.7 3749746.9 29.8 0.60 5.35
0.55 YES
L0007619 0 0.52119E-04 407935.5 3749756.8 29.8 0.60 5.35
0.55 YES
L0007620 0 0.52119E-04 407941.2 3749766.8 29.9 0.60 5.35
0.55 YES
L0007621 0 0.52119E-04 407946.9 3749776.8 29.9 0.60 5.35
0.55 YES
L0007622 0 0.52119E-04 407952.6 3749786.8 30.0 0.60 5.35
0.55 YES
L0007623 0 0.52119E-04 407958.3 3749796.8 30.0 0.60 5.35
0.55 YES
L0007624 0 0.52119E-04 407964.0 3749806.8 30.1 0.60 5.35
0.55 YES
L0007625 0 0.52119E-04 407969.7 3749816.8 30.2 0.60 5.35
0.55 YES
L0007626 0 0.52119E-04 407975.4 3749826.8 30.2 0.60 5.35
0.55 YES
L0007627 0 0.52119E-04 407981.0 3749836.8 30.4 0.60 5.35
0.55 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007628	0	0.52119E-04	407986.7	3749846.8	30.5	0.60	5.35	0.55	YES	
L0007629	0	0.52119E-04	407992.4	3749856.8	30.6	0.60	5.35	0.55	YES	
L0007630	0	0.52119E-04	407998.1	3749866.8	30.8	0.60	5.35			

0.55 YES
L0007631 0 0.52119E-04 408003.8 3749876.8 31.0 0.60 5.35
0.55 YES
L0007632 0 0.52119E-04 408009.5 3749886.8 31.2 0.60 5.35
0.55 YES
L0007633 0 0.52119E-04 408015.2 3749896.8 31.4 0.60 5.35
0.55 YES
L0007634 0 0.52119E-04 408020.9 3749906.7 31.6 0.60 5.35
0.55 YES
L0007635 0 0.52119E-04 408026.6 3749916.7 31.8 0.60 5.35
0.55 YES
L0007636 0 0.52119E-04 408032.4 3749926.7 32.0 0.60 5.35
0.55 YES
L0007637 0 0.52119E-04 408038.1 3749936.6 32.2 0.60 5.35
0.55 YES
L0007638 0 0.52119E-04 408043.8 3749946.6 32.4 0.60 5.35
0.55 YES
L0007639 0 0.52119E-04 408049.6 3749956.6 32.6 0.60 5.35
0.55 YES
L0007640 0 0.52119E-04 408055.3 3749966.5 32.8 0.60 5.35
0.55 YES
L0007641 0 0.52119E-04 408061.1 3749976.5 33.0 0.60 5.35
0.55 YES
L0007642 0 0.52119E-04 408066.8 3749986.4 33.1 0.60 5.35
0.55 YES
L0007643 0 0.52119E-04 408072.6 3749996.4 33.2 0.60 5.35
0.55 YES
L0007644 0 0.52119E-04 408078.3 3750006.4 33.4 0.60 5.35
0.55 YES
L0007645 0 0.52119E-04 408084.1 3750016.3 33.5 0.60 5.35
0.55 YES
L0007646 0 0.52119E-04 408089.8 3750026.3 33.6 0.60 5.35
0.55 YES
L0007647 0 0.52119E-04 408095.6 3750036.3 33.7 0.60 5.35
0.55 YES
L0007648 0 0.52119E-04 408101.3 3750046.2 33.8 0.60 5.35
0.55 YES
L0007649 0 0.52119E-04 408107.0 3750056.2 33.9 0.60 5.35
0.55 YES
L0007650 0 0.52119E-04 408112.8 3750066.1 34.0 0.60 5.35
0.55 YES
L0007651 0 0.52119E-04 408118.5 3750076.1 34.1 0.60 5.35
0.55 YES
L0007652 0 0.52119E-04 408124.3 3750086.1 34.2 0.60 5.35
0.55 YES
L0007653 0 0.52065E-04 407668.9 3748110.1 23.4 0.60 5.35
0.55 YES
L0007654 0 0.52065E-04 407668.8 3748121.6 23.4 0.60 5.35
0.55 YES
L0007655 0 0.52065E-04 407668.7 3748133.1 23.4 0.60 5.35

0.55 YES
L0007656 0 0.52065E-04 407668.7 3748144.6 23.4 0.60 5.35
0.55 YES
L0007657 0 0.52065E-04 407668.6 3748156.1 23.5 0.60 5.35
0.55 YES
L0007658 0 0.52065E-04 407668.6 3748167.6 23.5 0.60 5.35
0.55 YES
L0007659 0 0.52065E-04 407668.6 3748179.1 23.5 0.60 5.35
0.55 YES
L0007660 0 0.52065E-04 407668.6 3748190.6 23.5 0.60 5.35
0.55 YES
L0007661 0 0.52065E-04 407668.6 3748202.1 23.5 0.60 5.35
0.55 YES
L0007662 0 0.52065E-04 407668.6 3748213.6 23.5 0.60 5.35
0.55 YES
L0007663 0 0.52065E-04 407668.6 3748225.1 23.5 0.60 5.35
0.55 YES
L0007664 0 0.52065E-04 407668.6 3748236.6 23.5 0.60 5.35
0.55 YES
L0007665 0 0.52065E-04 407668.6 3748248.1 23.6 0.60 5.35
0.55 YES
L0007666 0 0.52065E-04 407668.6 3748259.6 23.6 0.60 5.35
0.55 YES
L0007667 0 0.52065E-04 407668.7 3748271.1 23.6 0.60 5.35
0.55 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007668	0	0.52065E-04	407668.7	3748282.6	23.6	0.60	5.35	0.55	YES	
L0007669	0	0.52065E-04	407668.7	3748294.1	23.6	0.60	5.35	0.55	YES	
L0007670	0	0.52065E-04	407668.7	3748305.6	23.6	0.60	5.35			

0.55 YES
L0007671 0 0.52065E-04 407668.7 3748317.1 23.6 0.60 5.35
0.55 YES
L0007672 0 0.52065E-04 407668.7 3748328.6 23.6 0.60 5.35
0.55 YES
L0007673 0 0.52065E-04 407668.8 3748340.1 23.6 0.60 5.35
0.55 YES
L0007674 0 0.52065E-04 407668.8 3748351.6 23.6 0.60 5.35
0.55 YES
L0007675 0 0.52065E-04 407668.8 3748363.1 23.6 0.60 5.35
0.55 YES
L0007676 0 0.52065E-04 407668.8 3748374.6 23.6 0.60 5.35
0.55 YES
L0007677 0 0.52065E-04 407668.8 3748386.1 23.6 0.60 5.35
0.55 YES
L0007678 0 0.52065E-04 407668.8 3748397.6 23.6 0.60 5.35
0.55 YES
L0007679 0 0.52065E-04 407668.9 3748409.1 23.6 0.60 5.35
0.55 YES
L0007680 0 0.52065E-04 407668.9 3748420.6 23.6 0.60 5.35
0.55 YES
L0007681 0 0.52065E-04 407668.9 3748432.1 23.5 0.60 5.35
0.55 YES
L0007682 0 0.52065E-04 407668.9 3748443.6 23.5 0.60 5.35
0.55 YES
L0007683 0 0.52065E-04 407668.9 3748455.1 23.5 0.60 5.35
0.55 YES
L0007684 0 0.52065E-04 407668.9 3748466.6 23.5 0.60 5.35
0.55 YES
L0007685 0 0.52065E-04 407669.0 3748478.1 23.5 0.60 5.35
0.55 YES
L0007686 0 0.52065E-04 407669.0 3748489.6 23.5 0.60 5.35
0.55 YES
L0007687 0 0.52065E-04 407669.0 3748501.1 23.5 0.60 5.35
0.55 YES
L0007688 0 0.52065E-04 407669.0 3748512.6 23.5 0.60 5.35
0.55 YES
L0007689 0 0.52065E-04 407669.0 3748524.1 23.5 0.60 5.35
0.55 YES
L0007690 0 0.52065E-04 407669.0 3748535.6 23.5 0.60 5.35
0.55 YES
L0007691 0 0.52065E-04 407669.1 3748547.1 23.5 0.60 5.35
0.55 YES
L0007692 0 0.52065E-04 407669.1 3748558.6 23.5 0.60 5.35
0.55 YES
L0007693 0 0.52065E-04 407669.1 3748570.1 23.5 0.60 5.35
0.55 YES
L0007694 0 0.52065E-04 407669.1 3748581.6 23.5 0.60 5.35
0.55 YES
L0007695 0 0.52065E-04 407669.1 3748593.1 23.6 0.60 5.35

0.55 YES
L0007696 0 0.52065E-04 407669.1 3748604.6 23.6 0.60 5.35
0.55 YES
L0007697 0 0.52065E-04 407669.1 3748616.1 23.6 0.60 5.35
0.55 YES
L0007698 0 0.52065E-04 407669.1 3748627.6 23.6 0.60 5.35
0.55 YES
L0007699 0 0.52065E-04 407669.1 3748639.1 23.7 0.60 5.35
0.55 YES
L0007700 0 0.52065E-04 407669.2 3748650.6 23.7 0.60 5.35
0.55 YES
L0007701 0 0.52065E-04 407669.4 3748662.1 23.7 0.60 5.35
0.55 YES
L0007702 0 0.52065E-04 407669.7 3748673.6 23.7 0.60 5.35
0.55 YES
L0007703 0 0.52065E-04 407669.9 3748685.1 23.7 0.60 5.35
0.55 YES
L0007704 0 0.52065E-04 407670.0 3748696.6 23.7 0.60 5.35
0.55 YES
L0007705 0 0.52065E-04 407670.0 3748708.1 23.7 0.60 5.35
0.55 YES
L0007706 0 0.52065E-04 407670.0 3748719.6 23.7 0.60 5.35
0.55 YES
L0007707 0 0.52065E-04 407670.0 3748731.1 23.7 0.60 5.35
0.55 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007708	0	0.52065E-04	407670.0	3748742.6	23.7	0.60	5.35	0.55	YES	
L0007709	0	0.52065E-04	407670.0	3748754.1	23.7	0.60	5.35	0.55	YES	
L0007710	0	0.52065E-04	407670.0	3748765.6	23.7	0.60	5.35			

0.55 YES
L0007711 0 0.52065E-04 407670.0 3748777.1 23.7 0.60 5.35
0.55 YES
L0007712 0 0.52065E-04 407670.0 3748788.6 23.6 0.60 5.35
0.55 YES
L0007713 0 0.52065E-04 407670.0 3748800.1 23.6 0.60 5.35
0.55 YES
L0007714 0 0.52065E-04 407670.0 3748811.6 23.6 0.60 5.35
0.55 YES
L0007715 0 0.52065E-04 407670.0 3748823.1 23.6 0.60 5.35
0.55 YES
L0007716 0 0.52065E-04 407670.0 3748834.6 23.6 0.60 5.35
0.55 YES
L0007717 0 0.52065E-04 407670.0 3748846.1 23.5 0.60 5.35
0.55 YES
L0007718 0 0.52065E-04 407670.0 3748857.6 23.5 0.60 5.35
0.55 YES
L0007719 0 0.52065E-04 407670.0 3748869.1 23.5 0.60 5.35
0.55 YES
L0007720 0 0.52065E-04 407670.0 3748880.6 23.6 0.60 5.35
0.55 YES
L0007721 0 0.52065E-04 407670.1 3748892.1 23.6 0.60 5.35
0.55 YES
L0007722 0 0.52065E-04 407670.1 3748903.6 23.5 0.60 5.35
0.55 YES
L0007723 0 0.52065E-04 407670.1 3748915.1 23.5 0.60 5.35
0.55 YES
L0007724 0 0.52065E-04 407670.1 3748926.6 23.5 0.60 5.35
0.55 YES
L0007725 0 0.52065E-04 407670.1 3748938.1 23.5 0.60 5.35
0.55 YES
L0007726 0 0.52065E-04 407670.1 3748949.6 23.6 0.60 5.35
0.55 YES
L0007727 0 0.52065E-04 407670.1 3748961.1 23.7 0.60 5.35
0.55 YES
L0007728 0 0.52065E-04 407670.1 3748972.6 23.9 0.60 5.35
0.55 YES
L0007729 0 0.52065E-04 407670.1 3748984.1 24.1 0.60 5.35
0.55 YES
L0007730 0 0.52065E-04 407670.1 3748995.6 23.9 0.60 5.35
0.55 YES
L0007731 0 0.52065E-04 407670.1 3749007.1 23.9 0.60 5.35
0.55 YES
L0007732 0 0.52065E-04 407670.1 3749018.6 24.1 0.60 5.35
0.55 YES
L0007733 0 0.52065E-04 407670.1 3749030.1 24.0 0.60 5.35
0.55 YES
L0007734 0 0.52065E-04 407670.1 3749041.6 24.0 0.60 5.35
0.55 YES
L0007735 0 0.52065E-04 407670.1 3749053.1 24.0 0.60 5.35

0.55 YES
L0007736 0 0.52065E-04 407670.1 3749064.6 24.0 0.60 5.35
0.55 YES
L0007737 0 0.52065E-04 407670.1 3749076.1 24.0 0.60 5.35
0.55 YES
L0007738 0 0.52065E-04 407670.2 3749087.6 24.0 0.60 5.35
0.55 YES
L0007739 0 0.52065E-04 407670.2 3749099.1 24.1 0.60 5.35
0.55 YES
L0007740 0 0.52065E-04 407670.3 3749110.6 24.1 0.60 5.35
0.55 YES
L0007741 0 0.52065E-04 407670.3 3749122.1 24.1 0.60 5.35
0.55 YES
L0007742 0 0.52065E-04 407670.3 3749133.6 24.2 0.60 5.35
0.55 YES
L0007743 0 0.52065E-04 407670.4 3749145.1 24.2 0.60 5.35
0.55 YES
L0007744 0 0.52065E-04 407670.0 3749156.5 24.1 0.60 5.35
0.55 YES
L0007745 0 0.52065E-04 407669.4 3749168.0 24.0 0.60 5.35
0.55 YES
L0007746 0 0.52065E-04 407668.8 3749179.5 23.9 0.60 5.35
0.55 YES
L0007747 0 0.52065E-04 407668.2 3749191.0 23.7 0.60 5.35
0.55 YES

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007748	0	0.52065E-04	407667.5	3749202.5	23.4	0.60	5.35	0.55	YES	
L0007749	0	0.52065E-04	407666.9	3749214.0	23.1	0.60	5.35	0.55	YES	
L0007750	0	0.52065E-04	407665.8	3749225.4	22.7	0.60	5.35			

0.55 YES
L0007751 0 0.52065E-04 407664.7 3749236.9 22.3 0.60 5.35
0.55 YES
L0007752 0 0.52065E-04 407663.6 3749248.3 21.8 0.60 5.35
0.55 YES
L0007753 0 0.52065E-04 407663.0 3749259.8 21.4 0.60 5.35
0.55 YES
L0007754 0 0.52065E-04 407662.6 3749271.3 21.1 0.60 5.35
0.55 YES
L0007755 0 0.52065E-04 407662.1 3749282.8 20.8 0.60 5.35
0.55 YES
L0007756 0 0.52065E-04 407661.7 3749294.3 20.6 0.60 5.35
0.55 YES
L0007757 0 0.52065E-04 407661.7 3749305.8 20.5 0.60 5.35
0.55 YES
L0007758 0 0.52065E-04 407661.7 3749317.3 20.6 0.60 5.35
0.55 YES
L0007759 0 0.52065E-04 407661.7 3749328.8 20.7 0.60 5.35
0.55 YES
L0007760 0 0.52065E-04 407661.7 3749340.3 20.8 0.60 5.35
0.55 YES
L0007761 0 0.52065E-04 407661.7 3749351.8 21.1 0.60 5.35
0.55 YES
L0007762 0 0.52065E-04 407662.3 3749363.2 21.4 0.60 5.35
0.55 YES
L0007763 0 0.52065E-04 407662.9 3749374.7 21.8 0.60 5.35
0.55 YES
L0007764 0 0.52065E-04 407663.3 3749386.2 22.4 0.60 5.35
0.55 YES
L0007765 0 0.52065E-04 407665.6 3749397.4 23.0 0.60 5.35
0.55 YES
L0007766 0 0.52065E-04 407668.5 3749408.6 23.6 0.60 5.35
0.55 YES
L0007767 0 0.52065E-04 407671.4 3749419.7 24.2 0.60 5.35
0.55 YES
L0007768 0 0.52065E-04 407674.3 3749430.8 24.8 0.60 5.35
0.55 YES
L0007769 0 0.52065E-04 407677.9 3749441.7 25.4 0.60 5.35
0.55 YES
L0007770 0 0.52065E-04 407681.7 3749452.6 25.9 0.60 5.35
0.55 YES
L0007771 0 0.52065E-04 407686.3 3749463.1 26.4 0.60 5.35
0.55 YES
L0007772 0 0.52065E-04 407691.2 3749473.5 26.8 0.60 5.35
0.55 YES
L0007773 0 0.52065E-04 407697.1 3749483.4 27.2 0.60 5.35
0.55 YES
L0007774 0 0.52065E-04 407703.2 3749493.1 27.4 0.60 5.35
0.55 YES
L0007775 0 0.52065E-04 407709.3 3749502.9 27.7 0.60 5.35

0.55 YES
L0007776 0 0.52065E-04 407715.8 3749512.3 27.9 0.60 5.35
0.55 YES
L0007777 0 0.52065E-04 407723.2 3749521.1 28.1 0.60 5.35
0.55 YES
L0007778 0 0.52065E-04 407730.6 3749529.9 28.2 0.60 5.35
0.55 YES
L0007779 0 0.52065E-04 407738.0 3749538.7 28.2 0.60 5.35
0.55 YES
L0007780 0 0.52065E-04 407745.6 3749547.4 28.3 0.60 5.35
0.55 YES
L0007781 0 0.52065E-04 407753.5 3749555.7 28.3 0.60 5.35
0.55 YES
L0007782 0 0.52065E-04 407761.5 3749564.0 28.3 0.60 5.35
0.55 YES
L0007783 0 0.52065E-04 407769.4 3749572.3 28.3 0.60 5.35
0.55 YES
L0007784 0 0.52065E-04 407777.6 3749580.4 28.3 0.60 5.35
0.55 YES
L0007785 0 0.52065E-04 407785.8 3749588.5 28.3 0.60 5.35
0.55 YES
L0007786 0 0.52065E-04 407794.0 3749596.6 28.3 0.60 5.35
0.55 YES
L0007787 0 0.52065E-04 407802.1 3749604.7 28.3 0.60 5.35
0.55 YES

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
L0007788	0	0.52065E-04	407809.6	3749613.4	28.3	0.60	5.35	0.55	YES	
L0007789	0	0.52065E-04	407817.1	3749622.1	28.3	0.60	5.35	0.55	YES	
L0007790	0	0.52065E-04	407824.6	3749630.8	28.4	0.60	5.35			

0.55 YES
L0007791 0 0.52065E-04 407832.1 3749639.6 28.4 0.60 5.35
0.55 YES
L0007792 0 0.52065E-04 407839.5 3749648.4 28.5 0.60 5.35
0.55 YES
L0007793 0 0.52065E-04 407846.9 3749657.1 28.6 0.60 5.35
0.55 YES
L0007794 0 0.52065E-04 407854.3 3749665.9 28.7 0.60 5.35
0.55 YES
L0007795 0 0.52065E-04 407860.7 3749675.5 28.7 0.60 5.35
0.55 YES
L0007796 0 0.52065E-04 407867.0 3749685.1 28.8 0.60 5.35
0.55 YES
L0007797 0 0.52065E-04 407873.4 3749694.7 28.9 0.60 5.35
0.55 YES
L0007798 0 0.52065E-04 407879.5 3749704.5 29.0 0.60 5.35
0.55 YES
L0007799 0 0.52065E-04 407885.6 3749714.2 29.1 0.60 5.35
0.55 YES
L0007800 0 0.52065E-04 407891.7 3749724.0 29.2 0.60 5.35
0.55 YES
L0007801 0 0.52065E-04 407897.4 3749733.9 29.4 0.60 5.35
0.55 YES
L0007802 0 0.52065E-04 407903.0 3749744.0 29.5 0.60 5.35
0.55 YES
L0007803 0 0.52065E-04 407908.9 3749753.9 29.6 0.60 5.35
0.55 YES
L0007804 0 0.52065E-04 407914.7 3749763.8 29.7 0.60 5.35
0.55 YES
L0007805 0 0.52065E-04 407920.5 3749773.7 29.8 0.60 5.35
0.55 YES
L0007806 0 0.52065E-04 407926.4 3749783.6 29.9 0.60 5.35
0.55 YES
L0007807 0 0.52065E-04 407932.3 3749793.4 29.9 0.60 5.35
0.55 YES
L0007808 0 0.52065E-04 407938.3 3749803.3 30.1 0.60 5.35
0.55 YES
L0007809 0 0.52065E-04 407944.2 3749813.1 30.1 0.60 5.35
0.55 YES
L0007810 0 0.52065E-04 407950.2 3749822.9 30.2 0.60 5.35
0.55 YES
L0007811 0 0.52065E-04 407956.1 3749832.8 30.3 0.60 5.35
0.55 YES
L0007812 0 0.52065E-04 407962.1 3749842.6 30.4 0.60 5.35
0.55 YES
L0007813 0 0.52065E-04 407968.1 3749852.5 30.5 0.60 5.35
0.55 YES
L0007814 0 0.52065E-04 407974.0 3749862.3 30.6 0.60 5.35
0.55 YES
L0007815 0 0.52065E-04 407979.9 3749872.2 30.8 0.60 5.35

```
0.55     YES
 L0007816         0   0.52065E-04  407985.7 3749882.1    30.9      0.60      5.35
0.55     YES
 L0007817         0   0.52065E-04  407991.6 3749892.0    31.1      0.60      5.35
0.55     YES
 L0007818         0   0.52065E-04  407997.5 3749901.9    31.4      0.60      5.35
0.55     YES
 L0007819         0   0.52065E-04  408003.3 3749911.8    31.6      0.60      5.35
0.55     YES
 L0007820         0   0.52065E-04  408009.1 3749921.7    31.8      0.60      5.35
0.55     YES
 L0007821         0   0.52065E-04  408014.9 3749931.6    32.0      0.60      5.35
0.55     YES
 L0007822         0   0.52065E-04  408020.7 3749941.6    32.2      0.60      5.35
0.55     YES
 L0007823         0   0.52065E-04  408026.6 3749951.5    32.4      0.60      5.35
0.55     YES
 L0007824         0   0.52065E-04  408032.4 3749961.4    32.6      0.60      5.35
0.55     YES
 L0007825         0   0.52065E-04  408038.3 3749971.3    32.8      0.60      5.35
0.55     YES
 L0007826         0   0.52065E-04  408044.1 3749981.2    33.0      0.60      5.35
0.55     YES
 L0007827         0   0.52065E-04  408050.0 3749991.1    33.1      0.60      5.35
0.55     YES
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*


                                                    *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                   BASE    RELEASE    INIT.
INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y      ELEV.   HEIGHT      SY
SZ      SOURCE  SCALAR VARY
     ID         CATS.                (METERS) (METERS) (METERS) (METERS) (METERS)
(METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - -

 L0007828         0   0.52065E-04  408055.8 3750001.0    33.3      0.60      5.35
0.55     YES
 L0007829         0   0.52065E-04  408061.7 3750010.9    33.4      0.60      5.35
0.55     YES
 L0007830         0   0.52065E-04  408067.5 3750020.8    33.5      0.60      5.35
```

0.55   YES
 L0007831   0   0.52065E-04 408073.4 3750030.7   33.6   0.60   5.35
0.55   YES
 L0007832   0   0.52065E-04 408079.1 3750040.6   33.7   0.60   5.35
0.55   YES
 L0007833   0   0.52065E-04 408084.9 3750050.6   33.8   0.60   5.35
0.55   YES
 L0007834   0   0.52065E-04 408090.6 3750060.6   33.9   0.60   5.35
0.55   YES
 L0007835   0   0.52065E-04 408096.4 3750070.5   34.0   0.60   5.35
0.55   YES
 L0007836   0   0.52065E-04 408102.2 3750080.4   34.0   0.60   5.35
0.55   YES
 L0007837   0   0.52065E-04 408108.0 3750090.3   34.1   0.60   5.35
0.55   YES

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

  ALL   L0007468   , L0007469   , L0007470   , L0007471   , L0007472   ,
L0007473   , L0007474   , L0007475   ,

             L0007476   , L0007477   , L0007478   , L0007479   , L0007480   ,
L0007481   , L0007482   , L0007483   ,

             L0007484   , L0007485   , L0007486   , L0007487   , L0007488   ,
L0007489   , L0007490   , L0007491   ,

             L0007492   , L0007493   , L0007494   , L0007495   , L0007496   ,
L0007497   , L0007498   , L0007499   ,

             L0007500   , L0007501   , L0007502   , L0007503   , L0007504   ,
L0007505   , L0007506   , L0007507   ,

             L0007508   , L0007509   , L0007510   , L0007511   , L0007512   ,
L0007513   , L0007514   , L0007515   ,

             L0007516   , L0007517   , L0007518   , L0007519   , L0007520   ,
L0007521   , L0007522   , L0007523   ,

L0007524 , L0007525 , L0007526 , L0007527 , L0007528 ,
L0007529 , L0007530 , L0007531 ,

L0007532 , L0007533 , L0007534 , L0007535 , L0007536 ,
L0007537 , L0007538 , L0007539 ,

L0007540 , L0007541 , L0007542 , L0007543 , L0007544 ,
L0007545 , L0007546 , L0007547 ,

L0007548 , L0007549 , L0007550 , L0007551 , L0007552 ,
L0007553 , L0007554 , L0007555 ,

L0007556 , L0007557 , L0007558 , L0007559 , L0007560 ,
L0007561 , L0007562 , L0007563 ,

L0007564 , L0007565 , L0007566 , L0007567 , L0007568 ,
L0007569 , L0007570 , L0007571 ,

L0007572 , L0007573 , L0007574 , L0007575 , L0007576 ,
L0007577 , L0007578 , L0007579 ,

L0007580 , L0007581 , L0007582 , L0007583 , L0007584 ,
L0007585 , L0007586 , L0007587 ,

L0007588 , L0007589 , L0007590 , L0007591 , L0007592 ,
L0007593 , L0007594 , L0007595 ,

L0007596 , L0007597 , L0007598 , L0007599 , L0007600 ,
L0007601 , L0007602 , L0007603 ,

L0007604 , L0007605 , L0007606 , L0007607 , L0007608 ,
L0007609 , L0007610 , L0007611 ,

L0007612 , L0007613 , L0007614 , L0007615 , L0007616 ,
L0007617 , L0007618 , L0007619 ,

L0007620 , L0007621 , L0007622 , L0007623 , L0007624 ,
L0007625 , L0007626 , L0007627 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
	L0007628 , L0007629 , L0007630 , L0007631 , L0007632 , L0007633 , L0007634 , L0007635 ,
	L0007636 , L0007637 , L0007638 , L0007639 , L0007640 , L0007641 , L0007642 , L0007643 ,
	L0007644 , L0007645 , L0007646 , L0007647 , L0007648 , L0007649 , L0007650 , L0007651 ,
	L0007652 , L0007653 , L0007654 , L0007655 , L0007656 , L0007657 , L0007658 , L0007659 ,
	L0007660 , L0007661 , L0007662 , L0007663 , L0007664 , L0007665 , L0007666 , L0007667 ,
	L0007668 , L0007669 , L0007670 , L0007671 , L0007672 , L0007673 , L0007674 , L0007675 ,
	L0007676 , L0007677 , L0007678 , L0007679 , L0007680 , L0007681 , L0007682 , L0007683 ,
	L0007684 , L0007685 , L0007686 , L0007687 , L0007688 , L0007689 , L0007690 , L0007691 ,
	L0007692 , L0007693 , L0007694 , L0007695 , L0007696 , L0007697 , L0007698 , L0007699 ,
	L0007700 , L0007701 , L0007702 , L0007703 , L0007704 , L0007705 , L0007706 , L0007707 ,
	L0007708 , L0007709 , L0007710 , L0007711 , L0007712 , L0007713 , L0007714 , L0007715 ,
	L0007716 , L0007717 , L0007718 , L0007719 , L0007720 , L0007721 , L0007722 , L0007723 ,
	L0007724 , L0007725 , L0007726 , L0007727 , L0007728 , L0007729 , L0007730 , L0007731 ,
	L0007732 , L0007733 , L0007734 , L0007735 , L0007736 , L0007737 , L0007738 , L0007739 ,
	L0007740 , L0007741 , L0007742 , L0007743 , L0007744 , L0007745 , L0007746 , L0007747 ,
	L0007748 , L0007749 , L0007750 , L0007751 , L0007752 ,

L0007753   , L0007754   , L0007755   ,

             L0007756   , L0007757   , L0007758   , L0007759   , L0007760   ,
L0007761   , L0007762   , L0007763   ,

             L0007764   , L0007765   , L0007766   , L0007767   , L0007768   ,
L0007769   , L0007770   , L0007771   ,

             L0007772   , L0007773   , L0007774   , L0007775   , L0007776   ,
L0007777   , L0007778   , L0007779   ,

             L0007780   , L0007781   , L0007782   , L0007783   , L0007784   ,
L0007785   , L0007786   , L0007787   ,

 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

                                                *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

             L0007788   , L0007789   , L0007790   , L0007791   , L0007792   ,
L0007793   , L0007794   , L0007795   ,

             L0007796   , L0007797   , L0007798   , L0007799   , L0007800   ,
L0007801   , L0007802   , L0007803   ,

             L0007804   , L0007805   , L0007806   , L0007807   , L0007808   ,
L0007809   , L0007810   , L0007811   ,

             L0007812   , L0007813   , L0007814   , L0007815   , L0007816   ,
L0007817   , L0007818   , L0007819   ,

             L0007820   , L0007821   , L0007822   , L0007823   , L0007824   ,
L0007825   , L0007826   , L0007827   ,

             L0007828   , L0007829   , L0007830   , L0007831   , L0007832   ,
L0007833   , L0007834   , L0007835   ,

             L0007836   , L0007837   ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	83011.	L0007468 , L0007469 , L0007470 , L0007471 , L0007472 , L0007473 , L0007474 , L0007475 ,
		L0007476 , L0007477 , L0007478 , L0007479 , L0007480 , L0007481 , L0007482 , L0007483 ,
		L0007484 , L0007485 , L0007486 , L0007487 , L0007488 , L0007489 , L0007490 , L0007491 ,
		L0007492 , L0007493 , L0007494 , L0007495 , L0007496 , L0007497 , L0007498 , L0007499 ,
		L0007500 , L0007501 , L0007502 , L0007503 , L0007504 , L0007505 , L0007506 , L0007507 ,
		L0007508 , L0007509 , L0007510 , L0007511 , L0007512 , L0007513 , L0007514 , L0007515 ,
		L0007516 , L0007517 , L0007518 , L0007519 , L0007520 , L0007521 , L0007522 , L0007523 ,
		L0007524 , L0007525 , L0007526 , L0007527 , L0007528 , L0007529 , L0007530 , L0007531 ,
		L0007532 , L0007533 , L0007534 , L0007535 , L0007536 , L0007537 , L0007538 , L0007539 ,
		L0007540 , L0007541 , L0007542 , L0007543 , L0007544 , L0007545 , L0007546 , L0007547 ,
		L0007548 , L0007549 , L0007550 , L0007551 , L0007552 , L0007553 , L0007554 , L0007555 ,
		L0007556 , L0007557 , L0007558 , L0007559 , L0007560 , L0007561 , L0007562 , L0007563 ,

L0007564 , L0007565 , L0007566 , L0007567 , L0007568 ,
L0007569 , L0007570 , L0007571 ,

L0007572 , L0007573 , L0007574 , L0007575 , L0007576 ,
L0007577 , L0007578 , L0007579 ,

L0007580 , L0007581 , L0007582 , L0007583 , L0007584 ,
L0007585 , L0007586 , L0007587 ,

L0007588 , L0007589 , L0007590 , L0007591 , L0007592 ,
L0007593 , L0007594 , L0007595 ,

L0007596 , L0007597 , L0007598 , L0007599 , L0007600 ,
L0007601 , L0007602 , L0007603 ,

L0007604 , L0007605 , L0007606 , L0007607 , L0007608 ,
L0007609 , L0007610 , L0007611 ,

L0007612 , L0007613 , L0007614 , L0007615 , L0007616 ,
L0007617 , L0007618 , L0007619 ,

L0007620 , L0007621 , L0007622 , L0007623 , L0007624 ,
L0007625 , L0007626 , L0007627 ,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs

L0007628 , L0007629 , L0007630 , L0007631 , L0007632 ,
L0007633 , L0007634 , L0007635 ,

L0007636 , L0007637 , L0007638 , L0007639 , L0007640 ,
L0007641 , L0007642 , L0007643 ,

L0007644 , L0007645 , L0007646 , L0007647 , L0007648 ,
L0007649 , L0007650 , L0007651 ,

L0007652 , L0007653 , L0007654 , L0007655 , L0007656 ,
L0007657 , L0007658 , L0007659 ,

```
             L0007660    , L0007661    , L0007662    , L0007663    , L0007664    ,
L0007665    , L0007666    , L0007667    ,

             L0007668    , L0007669    , L0007670    , L0007671    , L0007672    ,
L0007673    , L0007674    , L0007675    ,

             L0007676    , L0007677    , L0007678    , L0007679    , L0007680    ,
L0007681    , L0007682    , L0007683    ,

             L0007684    , L0007685    , L0007686    , L0007687    , L0007688    ,
L0007689    , L0007690    , L0007691    ,

             L0007692    , L0007693    , L0007694    , L0007695    , L0007696    ,
L0007697    , L0007698    , L0007699    ,

             L0007700    , L0007701    , L0007702    , L0007703    , L0007704    ,
L0007705    , L0007706    , L0007707    ,

             L0007708    , L0007709    , L0007710    , L0007711    , L0007712    ,
L0007713    , L0007714    , L0007715    ,

             L0007716    , L0007717    , L0007718    , L0007719    , L0007720    ,
L0007721    , L0007722    , L0007723    ,

             L0007724    , L0007725    , L0007726    , L0007727    , L0007728    ,
L0007729    , L0007730    , L0007731    ,

             L0007732    , L0007733    , L0007734    , L0007735    , L0007736    ,
L0007737    , L0007738    , L0007739    ,

             L0007740    , L0007741    , L0007742    , L0007743    , L0007744    ,
L0007745    , L0007746    , L0007747    ,

             L0007748    , L0007749    , L0007750    , L0007751    , L0007752    ,
L0007753    , L0007754    , L0007755    ,

             L0007756    , L0007757    , L0007758    , L0007759    , L0007760    ,
L0007761    , L0007762    , L0007763    ,

             L0007764    , L0007765    , L0007766    , L0007767    , L0007768    ,
L0007769    , L0007770    , L0007771    ,

             L0007772    , L0007773    , L0007774    , L0007775    , L0007776    ,
L0007777    , L0007778    , L0007779    ,

             L0007780    , L0007781    , L0007782    , L0007783    , L0007784    ,
L0007785    , L0007786    , L0007787    ,
 *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                            ***        12/12/22
```

*** SOURCE IDs DEFINED AS URBAN SOURCES
***

URBAN ID	URBAN POP	SOURCE IDs

L0007788 , L0007789 , L0007790 , L0007791 , L0007792 ,
L0007793 , L0007794 , L0007795 ,

L0007796 , L0007797 , L0007798 , L0007799 , L0007800 ,
L0007801 , L0007802 , L0007803 ,

L0007804 , L0007805 , L0007806 , L0007807 , L0007808 ,
L0007809 , L0007810 , L0007811 ,

L0007812 , L0007813 , L0007814 , L0007815 , L0007816 ,
L0007817 , L0007818 , L0007819 ,

L0007820 , L0007821 , L0007822 , L0007823 , L0007824 ,
L0007825 , L0007826 , L0007827 ,

L0007828 , L0007829 , L0007830 , L0007831 , L0007832 ,
L0007833 , L0007834 , L0007835 ,

L0007836 , L0007837 ,

*** GRIDDED RECEPTOR NETWORK SUMMARY ***

*** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART
***

*** X-COORDINATES OF GRID ***
(METERS)

407508.5, 407518.5, 407528.5, 407538.5, 407548.5, 407558.5, 407568.5,

407578.5, 407588.5, 407598.5,
       407608.5, 407618.5,

                                          *** Y-COORDINATES OF GRID ***
                                                (METERS)

      3749082.9, 3749092.9, 3749102.9, 3749112.9,

                                    *** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART
***

                                                * ELEVATION HEIGHTS IN METERS *

    Y-COORD | X-COORD (METERS)
    (METERS) | 407508.53   407518.53   407528.53   407538.53   407548.53
407558.53   407568.53   407578.53   407588.53
 -
- -

  3749112.90 | 23.30   23.40   23.40   23.30   23.30
   23.30   23.40   23.40   23.50
  3749102.90 | 23.30   23.30   23.30   23.30   23.30
   23.40   23.40   23.30   23.60
  3749092.90 | 21.90   22.40   22.80   23.10   23.30
   23.50   23.50   23.40   23.50
  3749082.90 | 20.00   20.20   20.60   21.40   22.30
   23.20   23.60   23.60   23.70

                                    *** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART
***

                                                * ELEVATION HEIGHTS IN METERS *

    Y-COORD | X-COORD (METERS)
    (METERS) | 407598.53   407608.53   407618.53
 -

```
  3749112.90 |          23.60        23.50        23.70
  3749102.90 |          23.80        23.60        23.70
  3749092.90 |          23.70        23.60        23.80
  3749082.90 |          23.70        23.70        23.90
```


 *** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***

(1=YES; 0=NO)

```
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1
1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***

(METERS/SEC)

1.54,   3.09,   5.14,   8.23,   10.80,

*** MODELOPTs: RegDFAULT CONC ELEV URBAN ADJ_U*

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: Met Data\KFUL_V9_ADJU\KFUL_v9.SFC
Met Version: 16216
Profile file: Met Data\KFUL_V9_ADJU\KFUL_v9.PFL

Surface format: FREE

Profile format: FREE

Surface station no.: 3166 Name: FULLERTON_AIRPORT Year: 2012
Upper air station no.: 3190 Name: UNKNOWN Year: 2012

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
12	01	01	1	01	-4.8	0.098	-9.000	-9.000	-999.	74.	18.0	0.26	2.61	1.00	0.96	322.	10.1	283.8	2.0
12	01	01	1	02	-1.9	0.072	-9.000	-9.000	-999.	47.	18.0	0.26	2.61	1.00	0.52	13.	10.1	283.1	2.0
12	01	01	1	03	-3.1	0.083	-9.000	-9.000	-999.	57.	16.3	0.26	2.61	1.00	0.75	73.	10.1	282.0	2.0
12	01	01	1	04	-4.3	0.094	-9.000	-9.000	-999.	69.	17.3	0.26	2.61	1.00	0.91	98.	10.1	281.4	2.0
12	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.26	2.61	1.00	0.00	0.	10.1	280.9	2.0
12	01	01	1	06	-2.1	0.074	-9.000	-9.000	-999.	48.	17.6	0.26	2.61	1.00	0.55	80.	10.1	280.4	2.0
12	01	01	1	07	-2.8	0.080	-9.000	-9.000	-999.	54.	16.3	0.26	2.61	1.00	0.69	201.	10.1	280.4	2.0
12	01	01	1	08	-1.5	0.066	-9.000	-9.000	-999.	41.	17.0	0.26	2.61	0.54	0.52	72.	10.1	280.9	2.0
12	01	01	1	09	37.4	-9.000	-9.000	-9.000	38.	-999.	-99999.0	0.26	2.61	0.31	0.00	0.	10.1	285.9	2.0
12	01	01	1	10	109.1	0.151	0.713	0.008	121.	141.	-2.9	0.26	2.61	0.24	0.79	268.	10.1	289.9	2.0
12	01	01	1	11	160.5	0.148	1.143	0.005	338.	136.	-1.8	0.26	2.61	0.21	0.70	273.	10.1	294.2	2.0
12	01	01	1	12	186.9	0.156	1.483	0.005	634.	148.	-1.8	0.26	2.61	0.20	0.74	230.	10.1	297.5	2.0
12	01	01	1	13	187.4	0.210	1.777	0.005	1088.	231.	-4.5	0.26	2.61	0.20	1.20	227.	10.1	300.4	2.0
12	01	01	1	14	160.3	0.235	1.833	0.005	1395.	274.	-7.4	0.26	2.61						

```
0.21    1.47  233.   10.1  300.9    2.0
 12 01 01   1 15  109.1  0.197  1.662  0.005 1527.  210.     -6.3  0.26   2.61
0.25    1.20  233.   10.1  302.0    2.0
 12 01 01   1 16   33.3  0.243  1.125  0.005 1548.  288.    -39.2  0.26   2.61
0.33    1.91  229.   10.1  298.1    2.0
 12 01 01   1 17   -9.1  0.141 -9.000 -9.000 -999.  132.     28.3  0.26   2.61
0.60    1.37  212.   10.1  294.2    2.0
 12 01 01   1 18   -4.3  0.094 -9.000 -9.000 -999.   69.     17.5  0.26   2.61
1.00    0.91  190.   10.1  292.0    2.0
 12 01 01   1 19   -2.8  0.079 -9.000 -9.000 -999.   54.     16.3  0.26   2.61
1.00    0.70  302.   10.1  289.2    2.0
 12 01 01   1 20   -4.0  0.091 -9.000 -9.000 -999.   65.     17.0  0.26   2.61
1.00    0.87  338.   10.1  288.1    2.0
 12 01 01   1 21   -6.3  0.113 -9.000 -9.000 -999.   91.     20.5  0.26   2.61
1.00    1.11  304.   10.1  287.0    2.0
 12 01 01   1 22   -3.1  0.082 -9.000 -9.000 -999.   57.     16.3  0.26   2.61
1.00    0.75   76.   10.1  285.4    2.0
 12 01 01   1 23   -2.4  0.076 -9.000 -9.000 -999.   50.     16.7  0.26   2.61
1.00    0.62  306.   10.1  284.9    2.0
 12 01 01   1 24   -3.6  0.087 -9.000 -9.000 -999.   62.     16.6  0.26   2.61
1.00    0.82  318.   10.1  283.8    2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 12 01 01 01   10.1 1  322.    0.96   283.8   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
 *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                           ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                           ***       15:25:42

                                     PAGE  25
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                *** THE PERIOD ( 43848 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL       ***
                                    INCLUDING SOURCE(S):     L0007468    , L0007469
, L0007470    , L0007471    , L0007472    ,
                  L0007473    , L0007474    , L0007475    , L0007476    , L0007477
, L0007478    , L0007479    , L0007480    ,
                  L0007481    , L0007482    , L0007483    , L0007484    , L0007485
, L0007486    , L0007487    , L0007488    ,
                  L0007489    , L0007490    , L0007491    , L0007492    , L0007493
, L0007494    , L0007495    ,  . . .      ,

                                     *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***
```

```
                                     ** CONC OF PM_10    IN MICROGRAMS/M**3
                  **

    Y-COORD  |                                                 X-COORD (METERS)
    (METERS) |     407508.53    407518.53    407528.53    407538.53    407548.53
407558.53    407568.53    407578.53    407588.53
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -

  3749112.90 |       0.15694      0.16601      0.17617      0.18763      0.20070
 0.21575      0.23334      0.25415      0.27931
  3749102.90 |       0.15687      0.16592      0.17606      0.18752      0.20057
 0.21563      0.23318      0.25392      0.27915
  3749092.90 |       0.15641      0.16561      0.17585      0.18736      0.20045
 0.21552      0.23306      0.25381      0.27894
  3749082.90 |       0.15512      0.16411      0.17437      0.18631      0.19988
 0.21531      0.23296      0.25374      0.27888
1 *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                         ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                        ***        15:25:42

                                   PAGE  26
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                *** THE PERIOD ( 43848 HRS) AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP: ALL       ***
                                   INCLUDING SOURCE(S):     L0007468    , L0007469
, L0007470    , L0007471    , L0007472    ,
                   L0007473    , L0007474    , L0007475    , L0007476    , L0007477
, L0007478    , L0007479    , L0007480    ,
                   L0007481    , L0007482    , L0007483    , L0007484    , L0007485
, L0007486    , L0007487    , L0007488    ,
                   L0007489    , L0007490    , L0007491    , L0007492    , L0007493
, L0007494    , L0007495    ,  . . .      ,

                                    *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***

                                     ** CONC OF PM_10    IN MICROGRAMS/M**3
                  **

    Y-COORD  |                                                 X-COORD (METERS)
    (METERS) |     407598.53    407608.53    407618.53
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - -

  3749112.90 |       0.31040      0.34983      0.40231
  3749102.90 |       0.31027      0.34969      0.40211
  3749092.90 |       0.31007      0.34953      0.40207
```

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL   ***
INCLUDING SOURCE(S):   L0007468   , L0007469 , L0007470   , L0007471   , L0007472   ,
L0007473   , L0007474   , L0007475   , L0007476   , L0007477 , L0007478   , L0007479   , L0007480   ,
L0007481   , L0007482   , L0007483   , L0007484   , L0007485 , L0007486   , L0007487   , L0007488   ,
L0007489   , L0007490   , L0007491   , L0007492   , L0007493 , L0007494   , L0007495   , . . .   ,

*** NETWORK ID: ONSITE   ; NETWORK TYPE: GRIDCART ***

** CONC OF PM_10   IN MICROGRAMS/M**3
**

Y-COORD (METERS)	X-COORD (METERS)				
	407508.53	407518.53	407528.53	407538.53	407548.53
3749112.9	0.56821 (15021808)	0.59549 (16112908)	0.62907 (16112908)	0.66160 (16112908)	0.69337 (16112908)
3749102.9	0.56443 (16112908)	0.59657 (16112908)	0.62774 (16112908)	0.65792 (16112908)	0.68732 (16112908)
3749092.9	0.56447 (16112908)	0.59527 (16112908)	0.62477 (16112908)	0.65308 (16112908)	0.68058 (16112908)
3749082.9	0.56018 (16112908)	0.58818 (16112908)	0.61587 (16112908)	0.64400 (16112908)	0.67162 (16112908)

*** THE   1ST HIGHEST 1-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL   ***

```
                                    INCLUDING SOURCE(S):     L0007468    , L0007469
, L0007470    , L0007471    , L0007472    ,
                  L0007473    , L0007474    , L0007475    , L0007476    , L0007477
, L0007478    , L0007479    , L0007480    ,
                  L0007481    , L0007482    , L0007483    , L0007484    , L0007485
, L0007486    , L0007487    , L0007488    ,
                  L0007489    , L0007490    , L0007491    , L0007492    , L0007493
, L0007494    , L0007495    ,  . . .      ,

                                    *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***

                                         ** CONC OF PM_10    IN MICROGRAMS/M**3
                  **

  Y-COORD  |                                                    X-COORD (METERS)
  (METERS) |       407558.53               407568.53               407578.53
      407588.53               407598.53
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - -

 3749112.9 |      0.72472 (16112908)      0.75658 (16112908)      0.79017 (16112908)
     0.82790 (16112908)      0.89050 (14042921)
 3749102.9 |      0.71659 (16112908)      0.74648 (16112908)      0.77847 (16112908)
     0.82025 (14042921)      0.88487 (14042921)
 3749092.9 |      0.70806 (16112908)      0.73643 (16112908)      0.76734 (16112908)
     0.81602 (14042921)      0.87899 (14042921)
 3749082.9 |      0.69890 (16112908)      0.72647 (16112908)      0.75736 (14042921)
     0.81204 (14042921)      0.87340 (14042921)
↟ *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                           ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                          ***       15:25:42

                                    PAGE  29
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                 *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION
VALUES FOR SOURCE GROUP:  ALL      ***
                                    INCLUDING SOURCE(S):     L0007468    , L0007469
, L0007470    , L0007471    , L0007472    ,
                  L0007473    , L0007474    , L0007475    , L0007476    , L0007477
, L0007478    , L0007479    , L0007480    ,
                  L0007481    , L0007482    , L0007483    , L0007484    , L0007485
, L0007486    , L0007487    , L0007488    ,
                  L0007489    , L0007490    , L0007491    , L0007492    , L0007493
, L0007494    , L0007495    ,  . . .      ,

                                    *** NETWORK ID: ONSITE   ;  NETWORK TYPE:
GRIDCART ***
```

Y-COORD (METERS)	X-COORD (METERS)	
	407608.53	407618.53
3749112.9	0.96658 (14042921)	1.06052 (14042921)
3749102.9	0.95928 (14042921)	1.05204 (14042921)
3749092.9	0.95227 (14042921)	1.04497 (14042921)
3749082.9	0.94614 (14042921)	1.03889 (14042921)

*** THE SUMMARY OF MAXIMUM PERIOD (43848 HRS) RESULTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3
**

GROUP ID	NETWORK AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE	GRID-ID
ALL	1ST HIGHEST VALUE IS	0.40231 AT (407618.53, 3749112.90, 23.70, 23.70, 0.00)	GC	ONSITE
	2ND HIGHEST VALUE IS	0.40211 AT (407618.53, 3749102.90, 23.70, 23.70, 0.00)	GC	ONSITE
	3RD HIGHEST VALUE IS	0.40207 AT (407618.53, 3749092.90, 23.80, 23.80, 0.00)	GC	ONSITE
	4TH HIGHEST VALUE IS	0.40206 AT (407618.53, 3749082.90, 23.90, 23.90, 0.00)	GC	ONSITE
	5TH HIGHEST VALUE IS	0.34983 AT (407608.53, 3749112.90, 23.50, 23.50, 0.00)	GC	ONSITE
	6TH HIGHEST VALUE IS	0.34969 AT (407608.53, 3749102.90, 23.60, 23.60, 0.00)	GC	ONSITE
	7TH HIGHEST VALUE IS	0.34953 AT (407608.53, 3749092.90, 23.60, 23.60, 0.00)	GC	ONSITE
	8TH HIGHEST VALUE IS	0.34949 AT (407608.53, 3749082.90, 23.70,		

```
   23.70,    0.00)  GC  ONSITE
         9TH HIGHEST VALUE IS       0.31040 AT (  407598.53,  3749112.90,    23.60,
   23.60,    0.00)  GC  ONSITE
        10TH HIGHEST VALUE IS       0.31027 AT (  407598.53,  3749102.90,    23.80,
   23.80,    0.00)  GC  ONSITE


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                        ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                       ***        15:25:42

                                  PAGE  31
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

                                                *** THE SUMMARY OF HIGHEST  1-HR
RESULTS ***


                                    ** CONC OF PM_10    IN MICROGRAMS/M**3
             **

                                                        DATE
                                       NETWORK
GROUP ID                            AVERAGE CONC     (YYMMDDHH)             RECEPTOR
(XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       1.06052  ON 14042921: AT (  407618.53,
3749112.90,    23.70,    23.70,    0.00)  GC  ONSITE


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION 21112  ***   *** Beach Blvd TOG_
                        ***        12/12/22
 *** AERMET - VERSION  16216 ***   ***
                       ***        15:25:42

                                  PAGE  32
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  URBAN  ADJ_U*

 *** Message Summary : AERMOD Model Execution ***
```

```
 --------- Summary of Total Messages --------

A Total of            0 Fatal Error Message(s)
A Total of            2 Warning Message(s)
A Total of         2285 Informational Message(s)

A Total of        43848 Hours Were Processed

A Total of         1588 Calm Hours Identified

A Total of          697 Missing Hours Identified (  1.59 Percent)


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
ME W186     891       MEOPEN: THRESH_1MIN 1-min ASOS wind speed threshold used
    0.50
ME W187     891       MEOPEN: ADJ_U* Option for Stable Low Winds used in AERMET


   ***********************************
   *** AERMOD Finishes Successfully ***
   ***********************************
```

RTE	RTE_SFX	DIST	CNTY	POSTMILE_PFX	POSTMILE	POSTMILE_SFX	LEG	DESCRIPTION	VEHICLE_AADT_TOTAL	TRUCK_AADT_TOTAL	TRK_PERCENT_TOT	TRK_2_AXLE	TRK_3_AXLE	TRK_4_AXLE	TRK_5_AXLE	TRK_2_AXLE_PCT	TRK_3_AXLE_PCT	TRK_4_AXLE_PCT	TRK_5_AXLE_PCT	EAL	YEAR_VER	EST
039		12	ORA		0.000		A	HUNTINGTON BEACH, JCT. RTE. 1	30300	654	2.16	493	76	19	66	75.36	11.59	2.90	10.14	50	18	E
039		12	ORA		3.120		B	HUNTINGTON BEACH, MAIN STREET/ELLIS AVENUE	61700	833	1.35	549	114	57	114	65.91	13.64	6.82	13.64	77	18	E
039		12	ORA		3.120		A	HUNTINGTON BEACH, MAIN STREET/ELLIS AVENUE	67100	725	1.08	478	99	49	99	65.91	13.64	6.82	13.64	67	18	E
039		12	ORA		5.800		B	HUNTINGTON BEACH, JCT. RTE. 405, SAN DIEGO FREEWAY	82000	1451	1.77	963	144	86	259	66.34	9.90	5.94	17.82	149	18	E
039		12	ORA		5.800		A	HUNTINGTON BEACH, JCT. RTE. 405, SAN DIEGO FREEWAY	86200	1474	1.71	978	146	88	263	66.34	9.90	5.94	17.82	151	18	E
039		12	ORA		8.478		B	WESTMINSTER, JCT. RTE. 22, GARDEN GROVE FREEWAY	77000	1879	2.44	1,258	244	88	289	66.95	12.99	4.68	15.38	179	18	E
039		12	ORA		8.478		A	WESTMINSTER, JCT. RTE. 22, GARDEN GROVE FREEWAY	76900	1938	2.52	1,248	274	109	308	64.39	14.12	5.61	15.88	191	18	E
039		12	ORA		12.685		B	ANAHEIM, LINCOLN AVENUE	68800	1706	2.48	1,098	241	96	271	64.35	14.14	5.62	15.89	168	18	E
039		12	ORA		12.685		A	ANAHEIM, LINCOLN AVENUE	68800	2050	2.98	1,318	221	100	410	64.30	10.78	4.90	20.02	223	18	E
039		12	ORA		14.378		B	BUENA PARK, JCT. RTE. 91, ARTESIA FREEWAY	68500	1665	2.43	974	256	109	326	58.49	15.36	6.56	19.59	186	18	E
039		12	ORA		14.378		A	BUENA PARK, JCT. RTE. 91, ARTESIA FREEWAY	57800	1248	2.16	711	112	87	337	57.00	9.00	7.00	27.00	164	18	E
039		12	ORA		19.168		B	LA HABRA, JCT. RTE. 90 EAST	50300	1056	2.10	634	84	63	275	60.00	8.00	6.00	26.00	134	18	E
039		12	ORA		19.168		A	LA HABRA, JCT. RTE. 90 EAST	50300	1811	3.60	1,489	138	56	129	82.20	7.60	3.10	7.10	118	18	V
039		12	ORA		20.719		B	LA HABRA, JCT. RTE. 72	32700	1079	3.30	795	99	35	150	73.70	9.20	3.20	13.90	94	18	V
039		12	ORA		22.600		B	HARBOR BOULEVARD	32800	984	3.00	677	136	56	115	68.80	13.80	5.70	11.70	84	18	V
039		07	LA		17.813		A	SAN GABRIEL RIVER BRIDGE	2100	97	4.62	69	18	5	5	71.22	18.88	4.84	5.06	7	06	V
039		07	LA		25.710		B	EAST FORK ROAD	1450	67	4.62	48	13	3	3	71.22	18.88	4.84	5.06	4	06	E
039		07	LA		38.150		B	CRYSTAL LAKE ROAD	140	7	4.67	5	1	0	1	71.43	14.29	0.00	14.29	1	06	E

Appendix B

Biological Resources Assessment

November 6, 2022

KIMLEY-HORN
Contact: Ruben Salas
3880 Lemon Street, Suite 420
Riverside, California 92501

SUBJECT: Biological Resources Assessment for the Proposed Craig Apartments Project Located at 7682, 7692, 7712, and 7222 Craig Avenue in the City of Buena Park, Orange County, California

Introduction

This report contains the findings of ELMT Consulting's (ELMT) biological resources assessment for the proposed Craig Apartments Project located at 7682, 7692, 7712, and 7222 Craig Avenue (project, project site), located in the City of Buena Park, Orange County, California. The habitat assessment was conducted by biologist Rachael A. Lyons on September 14, 2022 to document baseline conditions and assess the potential for special-status[1] plant and wildlife species to occur within the project site that could pose a constraint to implementation of the proposed project. Special attention was given to the suitability of the project site to support special-status plant and wildlife species identified by the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB), and other electronic databases as potentially occurring in the general vicinity of the project. Additionally, the report also addresses resources protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (FGC), federal Clean Water Act (CWA) regulated by the United States Army Corps of Engineers (Corps) and Regional Water Quality Control Board (Regional Board) respectively, and Section 1602 of the FGC administered by CDFW.

Project Location

The project site is generally located north of Interstate 5, south of State Route 90, west of State Route 57, and east of Interstate 605 in the City of Buena Park, Orange County, California. The site is depicted on the La Habra quadrangle of the United States Geological Survey's (USGS) 7.5-minute map series within an un-sectioned portion of Township 3 South, Range 11 West. Specifically, the site is located at 7682, 7692, 7712, and 7222 Craig Avenue, and is bounded on the north by Craig Avenue, to the south by Brea Creek, and lies west of Beach Boulevard, and east of Western Avenue within Assessor Parcel Numbers (APN) 066-132-09, -15, -16, and -17. Refer to Exhibits 1-3 in Attachment A.

1 As used in this report, "special-status" refers to plant and wildlife species that are federally and State listed, proposed, or candidates; plant species that have been designated with a California Native Plant Society Rare Plant Rank; wildlife species that are designated by the CDFW as fully protected, species of special concern, or watch list species; and specially protected natural vegetation communities as designated by the CDFW.

Project Description

The project proposes to construct a 3-story, 12-unit private apartment community. The total estimated area for the dwelling structures is 23,655 square feet, which will encompass 7,885 square feet of ground space. Development will include 36 parking spaces, a paved walkway and common areas as well as ornamental landscaping.

Methodology

A literature review and records search were conducted to determine which special-status biological resources have the potential to occur on or within the general vicinity of the project site. In addition to the literature review, a general habitat assessment or field investigation of the project site was conducted to document existing conditions and assess the potential for special-status biological resources to occur within the project site.

Literature Review

Prior to conducting the field investigation, a literature review and records search was conducted for special-status biological resources potentially occurring on or within the vicinity of the project site. Previously recorded occurrences of special-status plant and wildlife species and their proximity to the project site were determined through a query of the CDFW's QuickView Tool in the Biogeographic Information and Observation System (BIOS), CNDDB Rarefind 5, the California Native Plant Society's (CNPS) Electronic Inventory of Rare and Endangered Vascular Plants of California, Calflora Database, compendia of special-status species published by CDFW, and the United States Fish and Wildlife Service (USFWS) species listings.

All available reports, survey results, and literature detailing the biological resources previously observed on or within the vicinity of the project site were reviewed to understand existing site conditions 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 and non-special-status biological resources, as well as the following resources:

- Google Earth Pro historic aerial imagery (1985-2021);
- United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS), Soil Survey[2];
- USFWS Critical Habitat designations for Threatened and Endangered Species; and
- USFWS Endangered Species Profiles.

The literature review provided a baseline from which to inventory the biological resources potentially occurring within the project site. The CNDDB database was used, in conjunction with ArcGIS software, to locate the nearest recorded occurrences of special-status species and determine the distance from the project site.

2 A soil series is defined as a group of soils with similar profiles developed from similar parent materials under comparable climatic and vegetation conditions. These profiles include major horizons with similar thickness, arrangement, and other important characteristics, which may promote favorable conditions for certain biological resources.

Field Investigation

Following the literature review, biologist Rachael A. Lyons inventoried and evaluated the condition of the habitat within a 200-foot buffer around the project site, where applicable, on September 14, 2022. Plant communities and land cover types identified on aerial photographs during the literature review were verified by walking meandering transects throughout the project site. In addition, aerial photography was reviewed prior to the site investigation to locate potential natural corridors and linkages that may support the movement of wildlife through the area. These areas identified on aerial photography were then walked during the field investigation.

Soil Series Assessment

On-site and adjoining soils were researched prior to the field investigation using the USDA NRCS Soil Survey for Orange County, California. In addition, a review of the local geological conditions and historical aerial photographs was conducted to assess the ecological changes that the project site has undergone.

Plant Communities

Plant communities were mapped using 7.5-minute USGS topographic base maps and aerial photography. The plant communities were classified in accordance with Sawyer, Keeler-Wolf and Evens (2009), delineated on an aerial photograph, and then digitized into GIS Arcview. The Arcview application was used to compute the area of each plant community and/or land cover type in acres.

Plants

Common plant species observed during the field investigation were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less-familiar plants were photographed in the field and identified in the laboratory using taxonomic guides. Taxonomic nomenclature used in this study follows the 2012 Jepson Manual (Hickman 2012). In this report, scientific names are provided immediately following common names of plant species (first reference only).

Wildlife

Wildlife species detected during the field investigation by sight, calls, tracks, scat, or other sign were recorded during surveys in a field notebook. Field guides used to assist with identification of wildlife species during the survey included The Sibley Field Guide to the Birds of Western North America (Sibley 2003), A Field Guide to Western Reptiles and Amphibians (Stebbins 2003), 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 in this report (first reference only).

Jurisdictional Drainages and Wetlands

Aerial photography was reviewed prior to conducting a field investigation in order to locate and inspect any potential natural drainage features, ponded areas, or water bodies that may fall under the jurisdiction of the United States Army Corps of Engineers (Corps), Regional Water Quality Control Board (Regional Board), or CDFW. In general, surface drainage features indicated as blue-line streams on USGS maps that are observed or expected to exhibit evidence of flow are considered potential riparian/riverine habitat and are also subject to state and federal regulatory jurisdiction. In addition, ELMT reviewed jurisdictional waters information through examining historical aerial photographs to gain an understanding of the impact

of land-use on natural drainage patterns in the area. The USFWS National Wetland Inventory (NWI) and Environmental Protection Agency (EPA) Water Program "My Waters" data layers were also reviewed to determine whether any hydrologic features and wetland areas have been documented on or within the vicinity of the project site.

Existing Site Conditions

The proposed project site is located in a highly developed area in Buena Park. At present, the site is bounded to the south by Brea Creek (a concrete-lined flood control channel) and commercial development; to the north by Craig Avenue; to the west by residential development; and to the east by commercial development with Beach Boulevard beyond. The project site itself supports undeveloped, vacant land that formerly supported residential development.

Topography and Soils

Due to historical land uses, the site is relatively flat, at an approximate elevation of 70 feet above mean sea level. Based on the NRCS USDA Web Soil Survey, the project site is historically underlain by Chino silty clay loam (0 to 2 percent slopes). Refer to Exhibit 4, *Soils*, in Attachment A. Soils on-site have been compacted by anthropogenic disturbances from historic land uses.

Vegetation

Due to existing land uses, no native plant communities or natural communities of special concern were observed on or adjacent to the project site. The site consists of vacant, undeveloped land that has been subject to a variety of anthropogenic disturbances and was historically developed with residential structures. The site no longer supports these residences, but has been subjected to routine weed abatement, grading, and additional disturbance associated with surrounding development. These disturbances have eliminated the natural plant communities that were once present on and surrounding the project site. Refer to Attachment B, *Site Photographs*, for representative site photographs. No native plant communities will be impacted from implementation of the proposed project.

The project site supports a land cover type that would be classified as disturbed (refer to Exhibit 5, *Vegetation*, in Attachment A). The disturbed land is dominated by non-native grasses such as ripgut brome (*Bromus diandrus*), Bermuda grass (*Cynodon dactylon*), and slender oat (*Avena barbatum*). Additional common plant species observed in the non-native grassland include Mediterranean mustard (*Hirschfeldia incana*), prickly lettuce (*Lactuca serriola*), telegraph weed (*Heterotheca grandiflora*), Indian laurel (*Ficus microcarpa*), and California palm (*Washingtonia filifera*).

Wildlife

Plant communities provide foraging habitat, nesting/denning sites, and shelter from adverse weather or predation. This section provides a discussion of those wildlife species that were observed or are expected to occur within the project site. The discussion is to be used a general reference and is limited by the season, time of day, and weather conditions in which the field investigation was conducted. Wildlife detections were based on calls, songs, scat, tracks, burrows, and direct observation. The project site provides limited habitat for wildlife species except those adapted to a high degree of anthropogenic disturbances and development.

Fish

No fish or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for fish were observed on or within the vicinity of the project site. Therefore, no fish are expected to occur and are presumed absent from the project site.

Amphibians

No amphibians or hydrogeomorphic features (e.g., perennial creeks, ponds, lakes, reservoirs) that would provide suitable habitat for amphibian species were observed on or within the vicinity of the project site. Therefore, no amphibians are expected to occur on the project site and are presumed absent.

Reptiles

The survey area provides marginal habitat for local reptile species adapted to routine disturbance and development. No reptilian species were observed onsite at the time of the investigation. Common reptilian species that may occur on-site include western side-blotched lizard (*Uta stansburiana elegans*) and San Diego alligator lizard (*Elgaria multicarinata webbii*).

Birds

The project site provides marginal foraging and nesting habitat for bird species adapted to routine disturbance and development. Bird species detected during the field investigation include Eurasian collared dove (*Streptopelia decaocto*), house finch (*Haemorhous mexicanus*), black phoebe (*Sayornis nigricans*), and northern mockingbird (Mimus polyglottos).

Mammals

The survey area provides marginal foraging and cover habitat for mammalian species adapted to routine disturbance and development. No mammalian species were detected during the field investigation. Common mammalian species that could be expected to occur include domestic cat (*Felis catus*), opossum (*Didelphis virginiana*), and raccoon (*Procyon lotor*). Due to the nature and frequency of routine anthropogenic disturbances associated with on-site activities and adjacent roadways and development, no bat species are expected to roost on-site.

Nesting Birds

No active nests or birds displaying nesting behavior were observed during the field survey, although the survey was conducted outside the typical breeding season (generally February 1st through August 31st). Although subjected to routine disturbance, the ornamental vegetation bordering the project site, associated with neighboring residential development, has the potential to provide suitable nesting habitat for year-round and seasonal avian residents, as well as migrating songbirds that could occur in the area that are adapted to urban environments and high degrees of disturbance. In addition, the project site has the potential to provide suitable nesting opportunities for birds that nest on the open ground and those acclimated to routine disturbances (e.g. killdeer (*Charadrius vociferus*)). No raptors are expected to nest on-site due to lack of suitable nesting opportunities.

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). If construction occurs between February 1st and August 31st, a pre-construction

clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction.

Migratory Corridors and Linkages

Habitat linkages provide connections between larger habitat areas that are separated by development. Wildlife corridors are similar to linkages but provide specific opportunities for animals to disperse or migrate between areas. A corridor can be defined as a linear landscape feature of sufficient width to allow animal movement between two comparatively undisturbed habitat fragments. Adequate cover is essential for a corridor to function as a wildlife movement area. It is possible for a habitat corridor to be adequate for one species yet still inadequate for others. Wildlife corridors are features that allow for the dispersal, seasonal migration, breeding, and foraging of a variety of wildlife species. Additionally, open space can provide a buffer against both human disturbance and natural fluctuations in resources.

The proposed project will be confined to existing areas that have been heavily disturbed and are isolated from regional wildlife corridors and linkages. In addition, there are no riparian corridors, creeks, or useful patches of steppingstone habitat (natural areas) within or connecting the site to a recognized wildlife corridor or linkage. As such, implementation of the proposed project is not expected to impact wildlife movement opportunities. Therefore, impacts to wildlife corridors or linkages are not expected to occur.

Jurisdictional Areas

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates discharge of dredge or fill materials into "waters of the United States" pursuant to Section 404 of the Clean Water Act (CWA) and Section 10 of the Rivers and Harbors Act. Of the State agencies, the CDFW regulates alterations to streambed and bank under Fish and Wildlife Code Sections 1600 et seq., and the Regional Board regulates discharges into surface waters pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

The USFWS NWI and the USGS National Hydrography Dataset were reviewed to determine if any blueline streams or riverine resources have been documented within or immediately surrounding the project site. Based on this review, no riverine resources were identified on the project site.

No jurisdictional drainage and/or wetland features were observed on the project site during the field investigation. Further no blueline streams, have been recorded on the project site. The project site is bounded to the south by Brea Creek, a paved flood control channel. However, the project site is separated from Brea Creek by fencing and project development will be confined to the previously disturbed areas with no connection to Brea Creek. Therefore, development of the project will not result in impacts to Corps, Regional Board, or CDFW jurisdiction and regulatory approvals will not be required.

Special-Status Biological Resources

The CNDDB Rarefind 5 and the CNPS Electronic Inventory of Rare and Endangered Vascular Plants of California were queried for reported locations of special-status plant and wildlife species as well as special-status natural plant communities in the La Habra USGS 7.5-minute quadrangle. Additionally, the Whittier, Los Alamitos, and Anaheim USGS 7.5-minute quadrangles were queried do the proximity of the project site to all four quadrangle boundaries. The habitat assessment evaluated the conditions of the habitat(s) within the boundaries of the project site to determine if the existing plant communities, at the time of the

survey, have the potential to provide suitable habitat(s) for special-status plant and wildlife species.

The literature search identified twenty-seven (27) special-status plant species, eighty-one (81) special-status wildlife species, and two (2) special-status plant communities as having potential to occur within the La Habra, Whittier, Los Alamitos, and Anaheim USGS 7.5-minute quadrangles. Special-status plant and wildlife species were evaluated for their potential to occur within the project site based on habitat requirements, availability and quality of suitable habitat, and known distributions. Species determined to have the potential to occur within the general vicinity of the project site is presented in Attachment D*: Potentially Occurring Special-Status Biological Resources*.

Special-Status Plants

According to the CNDDB and CNPS, twenty-seven (27) special-status plant species have been recorded in the La Habra, Whittier, Los Alamitos, and Anaheim quadrangles (refer to Attachment D). No special-status plant species were observed on-site during the habitat assessment. The project site has been subject to anthropogenic disturbances from on-site surrounding development. These disturbances have reduced the suitability of the habitat to support special-status plant species known to occur in the general vicinity of the project site. Based on habitat requirements for specific special-status plant species and the availability and quality of habitats needed by each species, it was determined that the project site does not provide suitable habitat for any of the special-status plant species known to occur in the area and all are presumed to be absent from the project site. No focused surveys are recommended.

Special-Status Wildlife

According to the CNDDB, eighty-one (81) special-status wildlife species have been reported in the Anaheim quadrangle (refer to Attachment D). No special-status wildlife species observed on-site during the habitat assessment. The project site and surrounding area have been subject to a variety of anthropogenic disturbances from on-site and surrounding development. These disturbances have eliminated the natural plant communities that once occurred onsite which has reduced potential foraging and nesting/denning opportunities for wildlife species.

Based on habitat requirements for specific species and the availability and quality of onsite habitats, it was determined that the proposed project site does not provide suitable habitat for any of the other special-status wildlife species known to occur in the area since the project site has been heavily disturbed from historic and existing land uses and surrounding development.

Special-Status Plant Communities

According to the CNDDB, two (2) special-status plant communities have been reported in the Anaheim, Whittier, Los Alamitos, and La Habra USGS 7.5-minute quadrangles: California Walnut Woodland, and Southern Coastal Salt Marsh. No special-status plant communities were observed during the field investigation. Therefore, no special-status plant communities will be impacted by implementation of the proposed project.

Critical Habitats

Under the federal Endangered Species Act, “Critical Habitat” is designated at the time of listing of a species or within one year of listing. Critical Habitat refers to specific areas within the geographical range of a

species at the time it is listed that include the physical or biological features that are essential to the survival and eventual recovery of that species. Maintenance of these physical and biological features requires special management considerations or protection, regardless of whether individuals or the species are present or not. All federal agencies are required to consult with the USFWS regarding activities they authorize, fund, or permit which may affect a federally listed species or its designated Critical Habitat. The purpose of the consultation is to ensure that projects will not jeopardize the continued existence of the listed species or adversely modify or destroy its designated Critical Habitat. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing is on federal lands, uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highways Administration or a Clean Water Act Permit from the United States Army Corps of Engineers). If a there is a federal nexus, then the federal agency that is responsible for providing the funding or permit would consult with the USFWS.

The project site is not located within federally designated Critical Habitat. Further, the closest Critical Habitat designation is located approximately 1.57 miles northeast of the site for coastal California gnatcatcher (*Polioptila californica californica*). Refer to Exhibit 6, *Critical Habitat*, in Attachment A. Therefore, no impacts to federally designated Critical Habitat will occur from implementation of the proposed project.

Conclusion

Based literature review and field survey, and existing site conditions discussed in this report, implementation of the project will have no significant impacts on federally or State listed species known to occur in the general vicinity of the project site. Additionally, the project will have no effect on designated Critical Habitat, since there is no federal nexus, or regional wildlife corridors/linkages because none exist within the area. No jurisdictional drainage and/or wetland features were observed on the project site during the field investigation. No further surveys are recommended. With completion of the recommendations provided below, no impacts to year-round, seasonal, or special-status avian residents or special-status species will occur from implementation of the proposed project.

Recommendations

Migratory Bird Treaty Act and Fish and Game Code

Nesting birds are protected pursuant to the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code (Sections 3503, 3503.5, 3511, and 3513 prohibit the take, possession, or destruction of birds, their nests or eggs). In order to protect migratory bird species, a nesting bird clearance survey should be conducted prior to any ground disturbance or vegetation removal activities that may disrupt the birds during the nesting season.

If construction occurs between February 1st and August 31st, a pre-construction clearance survey for nesting birds should be conducted within three (3) days of the start of any vegetation removal or ground disturbing activities to ensure that no nesting birds will be disturbed during construction. The biologist conducting the clearance survey should document a negative survey with a brief letter report indicating that no impacts to active avian nests will occur. If an active avian nest is discovered during the pre-construction clearance survey, construction activities should stay outside of a no-disturbance buffer. The size of the no-disturbance buffer will be determined by the wildlife biologist and will depend on the level of noise and/or surrounding

anthropogenic disturbances, line of sight between the nest and the construction activity, type and duration of construction activity, ambient noise, species habituation, and topographical barriers. These factors will be evaluated on a case-by-case basis when developing buffer distances. Limits of construction to avoid an active nest will be established in the field with flagging, fencing, or other appropriate barriers; and construction personnel will be instructed on the sensitivity of nest areas. A biological monitor should be present to delineate the boundaries of the buffer area and to monitor the active nest to ensure that nesting behavior is not adversely affected by the construction activity. Once the young have fledged and left the nest, or the nest otherwise becomes inactive under natural conditions, construction activities within the buffer area can occur.

Please do not hesitate to contact Tom McGill at (951) 285-6014 or tmcgill@elmtconsulting.com or Travis McGill at (909) 816-1646 or travismcgill@elmtconsulting.com should you have any questions this report.

Sincerely,

Thomas J. McGill, Ph.D.
Managing Director

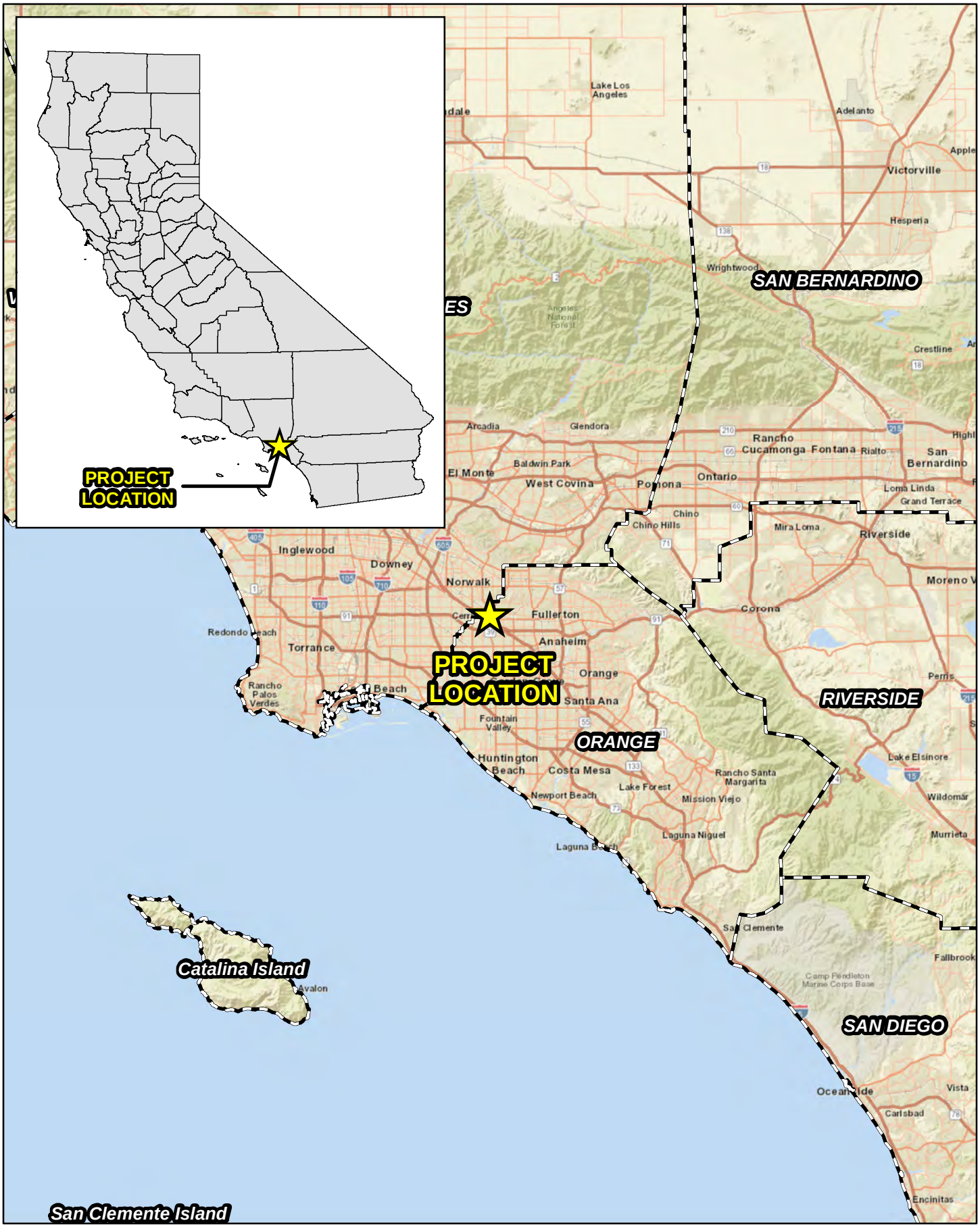
Travis J. McGill
Director

Attachments:

A. *Project Exhibits*
B. *Site Plan*
C. *Site Photographs*
D. *Potentially Occurring Special-Status Biological Resources*
E. *Regulations*

Attachment A

Project Exhibits



CRAIG APARTMENTS
BIOLOGICAL RESOURCES ASSESSMENT

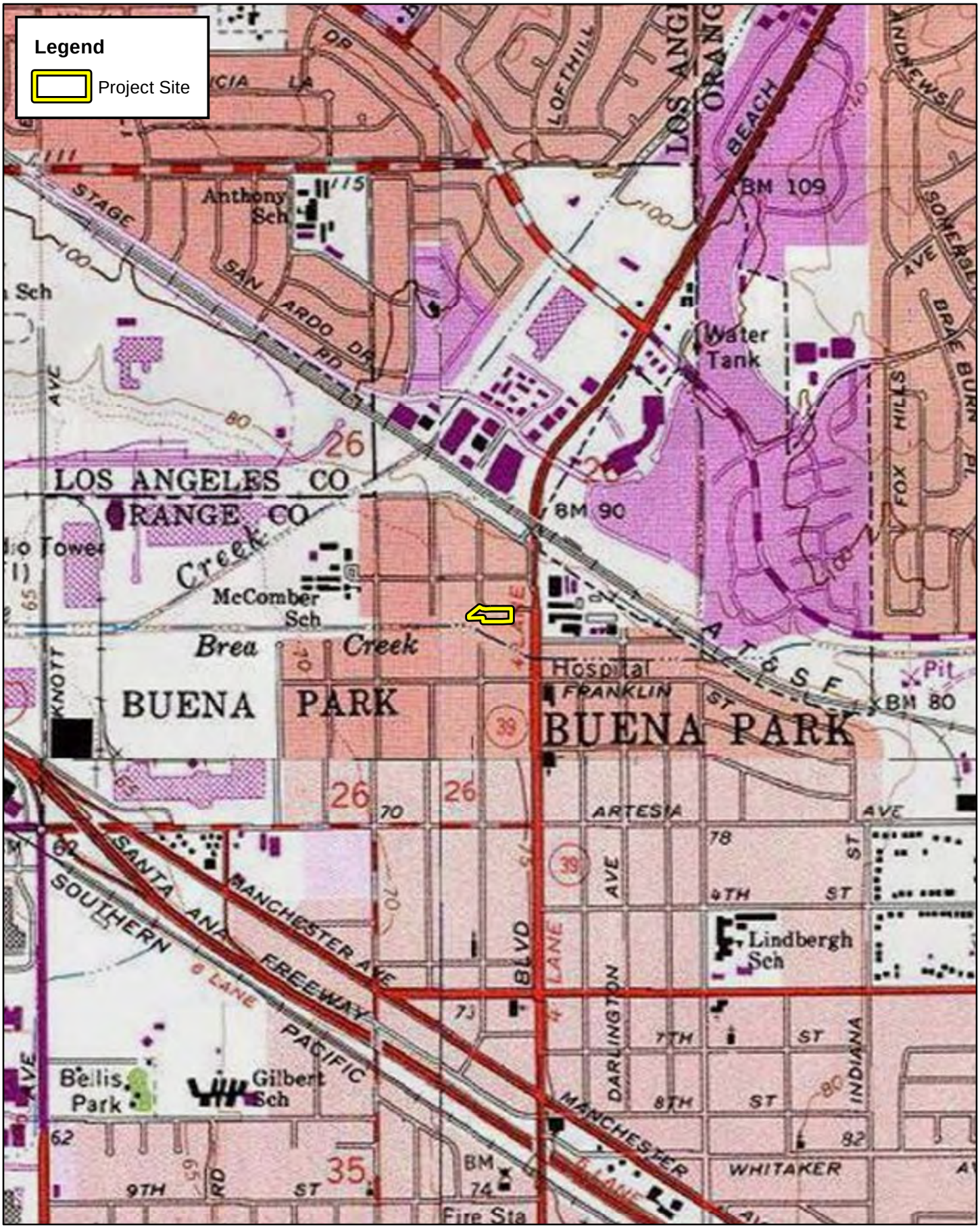
Regional Vicinity

ELMT CONSULTING

0 2.5 5 10 Miles

Source: World Street Map, Orange County

Exhibit 1



Source: USA Topographic Map, Orange County

CRAIG APARTMENTS
BIOLOGICAL RESOURCES ASSESSMENT

Site Vicinity

Exhibit 2



0 50 100 200 Feet

Source: ESRI Aerial Imagery, Orange County

CRAIG APARTMENTS
BIOLOGICAL RESOURCES ASSESSMENT

Project Site

Exhibit 3



ELMT CONSULTING

0 50 100 200 Feet

Source: ESRI Aerial Imagery, Soil Survey Geographic Database, Orange County

CRAIG APARTMENTS
BIOLOGICAL RESOURCES ASSESSMENT

Soils

Exhibit 4



ELMT CONSULTING

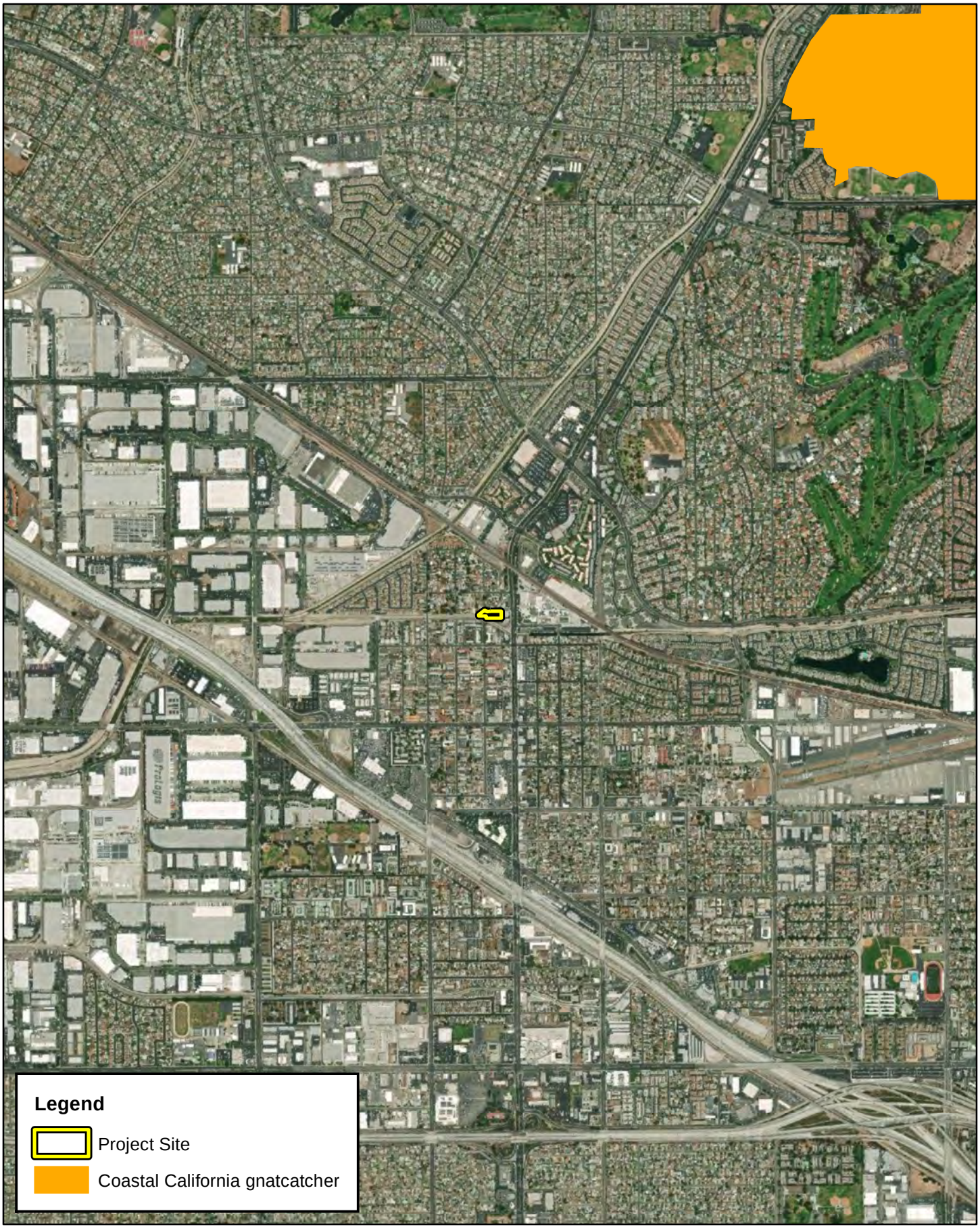
0 50 100 200 Feet

Source: ESRI Aerial Imagery, Orange County

CRAIG APARTMENTS
BIOLOGICAL RESOURCES ASSESSMENT

Vegetation

Exhibit 5



ELMT CONSULTING

0 5001,000 2,000
Feet

Source: ESRI Aerial Imagery, USFWS Critical Habitat, Orange County

CRAIG APARTMENTS
BIOLOGICAL RESOURCES ASSESSMENT

Critical Habitat

Exhibit 6

Attachment B

Site Plan



CRAIG APARTMENTS

7682, 7692, 7712, 7722 CRAIG AVE

BUENA PARK, CA 90621

3530 Wilshire Blvd., #1830
Los Angeles, CA 90010
OFFICE +1.213.788.1175
FAX +1.213.788.1174
EMAIL info@a-n-d-m-o-r-e.com
www.a-n-d-m-o-r-e.com

CRAIG APARTMENT

7682, 7692, 7712, 7722 CRAIG AVE
BUENA PARK, CA 90621

ISSUE DATES

NO.	DESCRIPTION	DATE
1	1ST PRE-APP REVIEW	12/04/21

SEAL

JOB NO: 211101

SHEET TITLE

COVER PAGE

STATUS:

SHEET NO.

A1.00

OVERALL PERSPECTIVE



PROJECT SUMMARY

PROJECT NAME : CRAIG APARTMENTS

PROJECT ADDRESS :
7682 CRAIG AVE, BUENA PARK, CA 90621 (APN: 066-132-09)
7692 CRAIG AVE, BUENA PARK, CA 90621 (APN: 066-132-15)
7712 CRAIG AVE, BUENA PARK, CA 90621 (APN: 066-132-16)
7722 CRAIG AVE, BUENA PARK, CA 90621 (APN: 066-132-17)

LEGAL DESCRIPTION :
LOT 5 OF TRACT NO. 1211 IN THE CITY OF BUENA PARK, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 38 PAGE 13 OF MISCELLANEOUS MAPS IN THE OFFICE OF THE COUNTY RECORDED OF SAID COUNTY.

LOT 6 OF TRACT NO. 1211 IN THE CITY OF BUENA PARK, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 38 PAGE 13 OF MISCELLANEOUS MAPS IN THE OFFICE OF THE COUNTY RECORDED OF SAID COUNTY.

LOT 7 OF TRACT NO. 1211 IN THE CITY OF BUENA PARK, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 38 PAGE 13 OF MISCELLANEOUS MAPS IN THE OFFICE OF THE COUNTY RECORDED OF SAID COUNTY.

LOT 5 OF TRACT NO. 1211 IN THE CITY OF BUENA PARK, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 38 PAGE 13 OF MISCELLANEOUS MAPS IN THE OFFICE OF THE COUNTY RECORDED OF SAID COUNTY.

PROJECT DESCRIPTION :
NEW PROPOSED 3-STORY OF A 12 UNIT APARTMENT
(2 STORIES OF TYPE-V-A OVER 1 STORY OF TYPE-I-A CONSTRUCTION)
100% PRIVATELY FUNDED. NOT PUBLIC HOUSING.

ZONING : SINGLE FAMILY RESIDENTIAL (RS-6)

LOT AREA :

PARCEL 1 - LOT 5	7,568.24 SF
PARCEL 2 - LOT 6	7,833.48 SF
PARCEL 3 - LOT 7	7,340.70 SF
PARCEL 4 - LOT 8	7,340.70 SF
TOTAL	**30,083.12 SF**

FLOOR AREA

FLOOR	AREA
GROUND (I-A)	7,885 SF
SECOND FLOOR (V-A)	8,520 SF
THIRD FLOOR (V-A)	7,250 SF
TOTAL	**23,655 SF**

TOTAL NO. OF UNITS : 12

BUILDING HEIGHT : 30'-6"

LOT COVERAGE : 40%

PARKING PROVIDED :
36 PARKING SPACES
- 1 VAN ACCESSIBLE
- 21 STANDARD (12 COVERED)
- 14 COMPACT (12 COVERED)

SHEET INDEX

ARCHITECTURAL

A1.00 COVER PAGE
A1.01 PROJECT SUMMARY
A1.02 SITE ANALYSIS & DIAGRAM
A2.00 SITE PLAN
A2.01 GROUND FLOOR & SECOND FLOOR PLAN
A2.02 THIRD FLOOR PLAN
A3.01b COLORED BUILDING ELEVATIONS

LANDSCAPE

L1.01 CONCEPTUAL LANDSCAPE

3530 Wilshire Blvd., #1830
Los Angeles, CA 90010
OFFICE +1.213.788.1175
FAX +1.213.788.1174
EMAIL info@a-n-d-m-o-r-e.com
www.a-n-d-m-o-r-e.com

CRAIG APARTMENT

7682, 7692, 7712, 7722 CRAIG AVE
BUENA PARK, CA 90621

ISSUE DATES

NO.	DESCRIPTION	DATE
1	1ST PRE-APP REVIEW	12/04/21

SEAL

JOB NO: 211101

SHEET TITLE
PROJECT SUMMARY

STATUS:

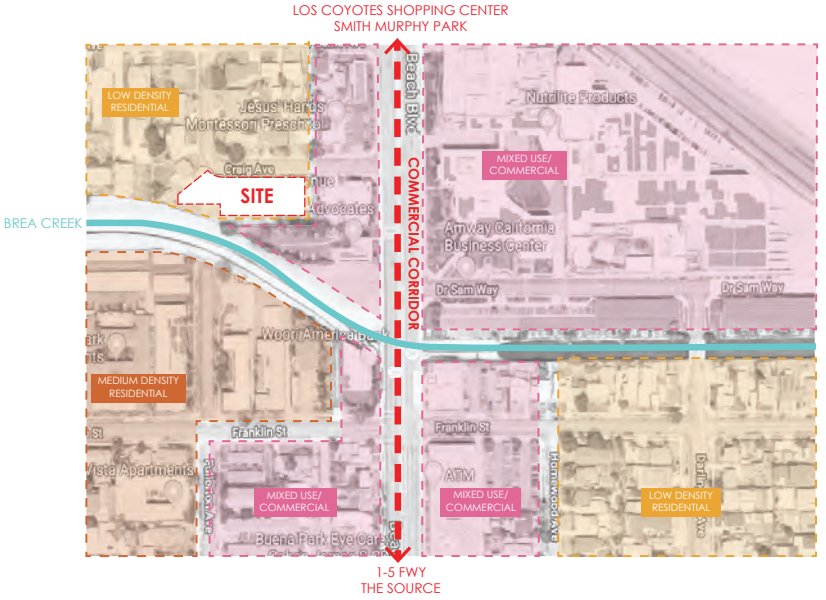
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A1.01



SITE ANALYSIS

SCALE -

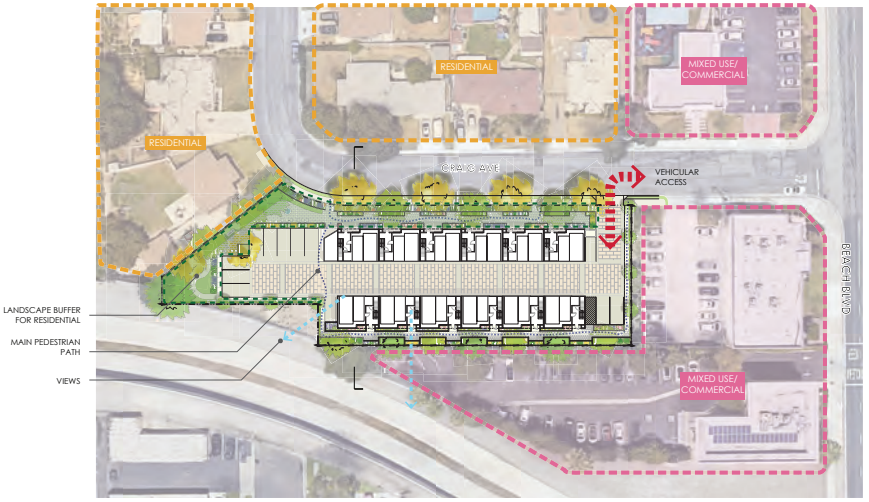
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SITE ANALYSIS

SCALE -

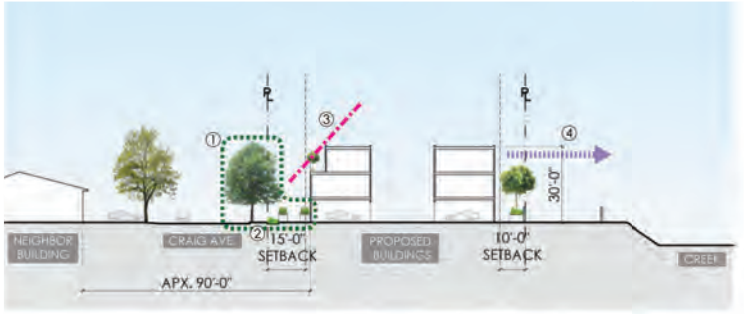
2



CONTEXTUAL ANALYSIS

SCALE -

3



① PARKWAY IMPROVEMENT
Proposed sidewalk parkway will have pleasant low planting as well as trees to improve walkability of neighborhood.

② PEDESTRIAN ORIENTED LANDSCAPING
At grade planting along sidewalk enhance walkable quality of neighborhood while screening the proposed buildings.

③ TRANSITIONAL SETBACK
In addition to 15' front setback, the proposed building will have recessed top floor to reduce the visual volume of the building.

④ OPTIMIZED VIEWSHED
The proposed building have more opening towards south side where there are less privacy concerns due the area having no single family housing.

SECTION DIAGRAM

SCALE -

4

3530 Wilshire Blvd., #1830
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EMAIL info@a-n-d-m-o-r-e.com
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CRAIG APARTMENT

7682, 7692, 7712, 7722 CRAIG AVE
BUENA PARK, CA 90621

ISSUE DATES

NO.	DESCRIPTION	DATE
1	1ST PRE-APP REVIEW	12/04/21

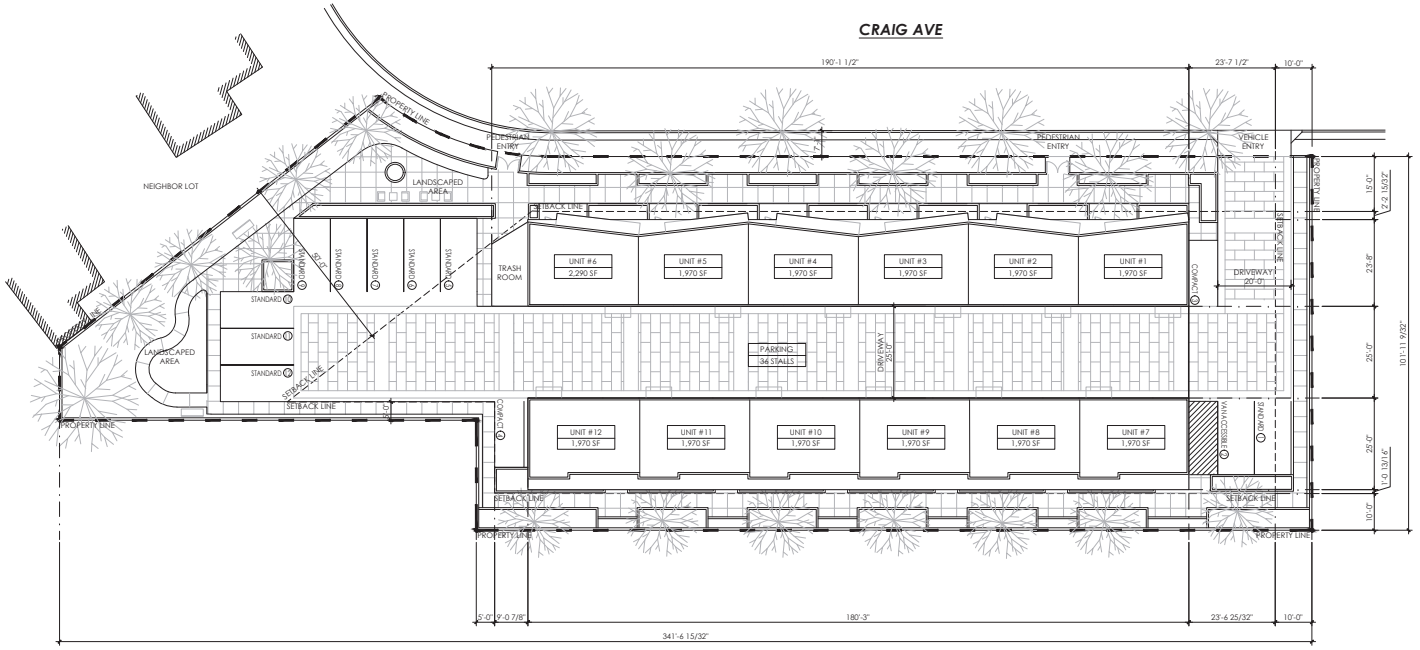
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JOB NO: 211101

SHEET TITLE
SITE ANALYSIS & DIAGRAM

STATUS:

SHEET NO.
A1.02



NORTH

SITE PLAN

SCALE 1/16" = 1'-0" (1)

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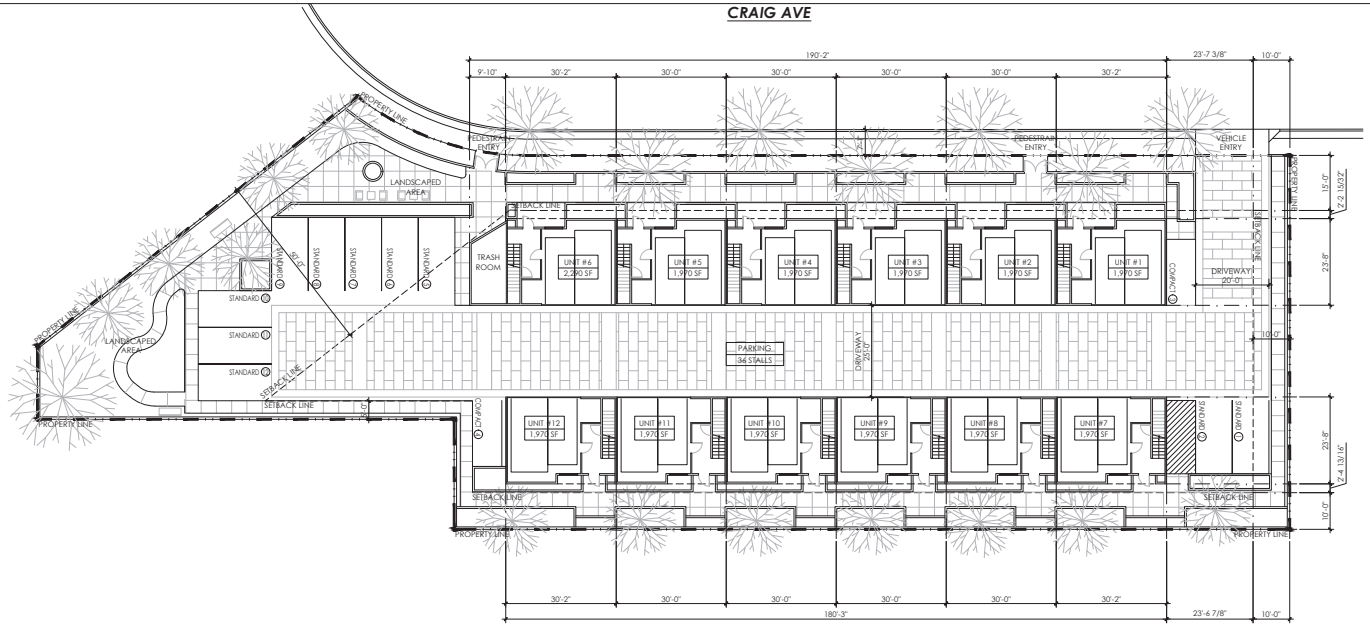
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JOB NO: 211101

SHEET TITLE
SITE PLAN

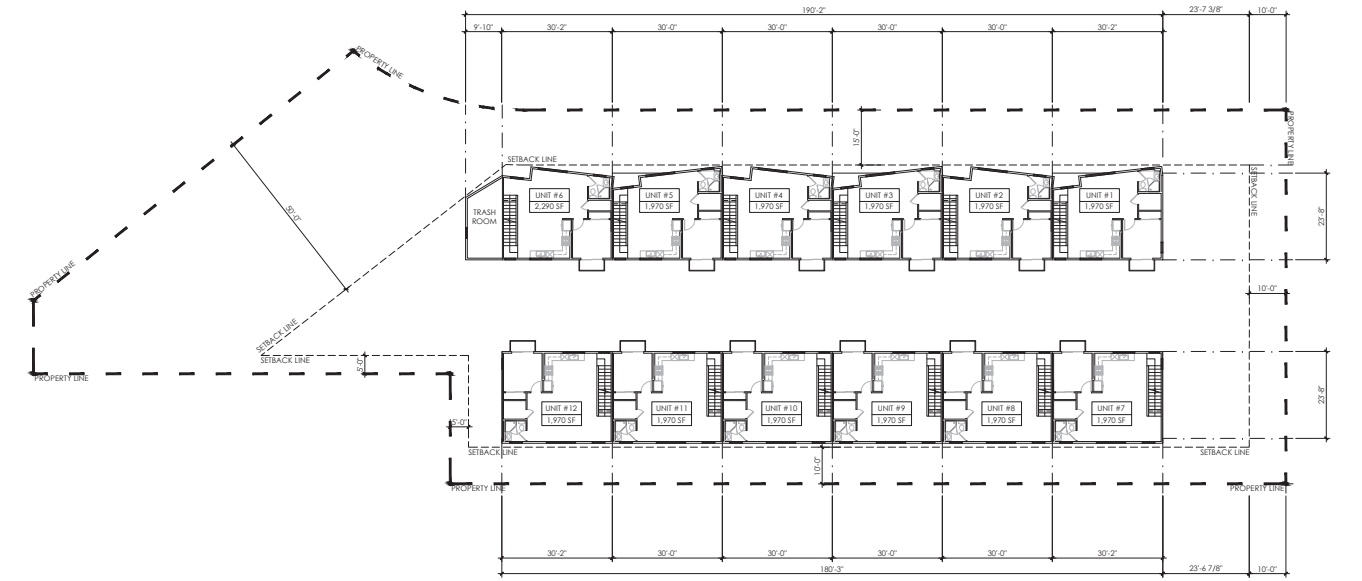
STATUS:

SHEET NO.
A2.00



GROUND FLOOR PLAN

SCALE 1/16" = 1'-0" 1



SECOND FLOOR PLAN

SCALE 1/16" = 1'-0" 2

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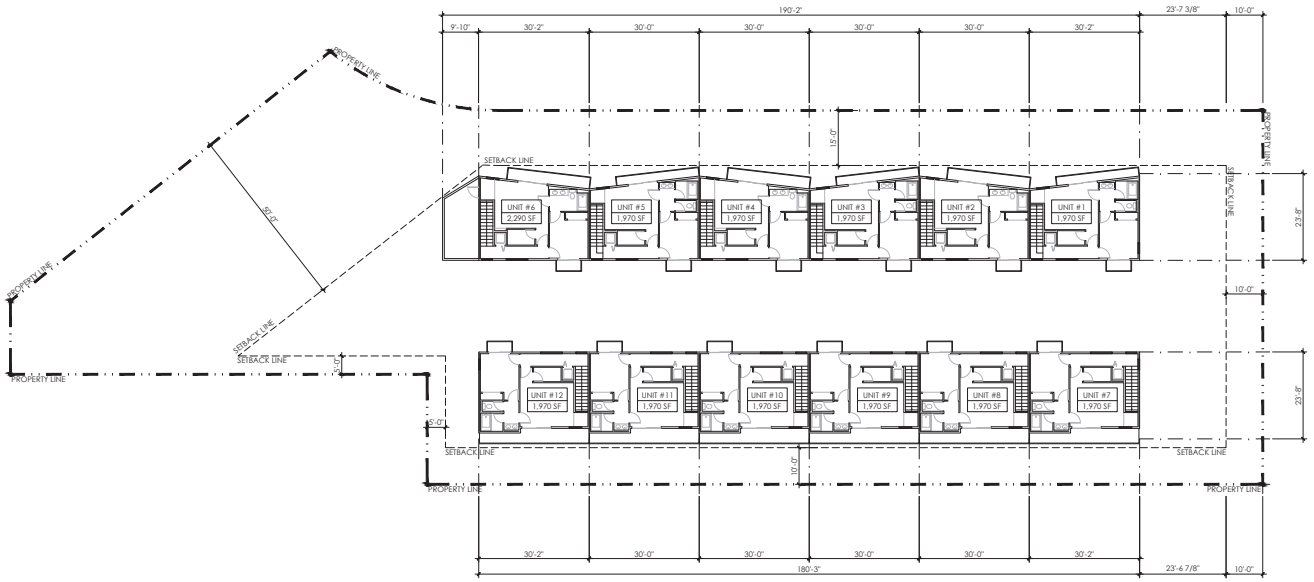
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JOB NO: 211101

SHEET TITLE
GROUND FLOOR & SECOND FLOOR PLAN

STATUS:

SHEET NO.
A2.01



THIRD FLOOR PLAN

SCALE 1/16" = 1'-0" (1)

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ISSUE DATES

NO.	DESCRIPTION	DATE
1	1ST PRE-APP REVIEW	12/04/21

SEAL

JOB NO: 211101

SHEET TITLE
THIRD FLOOR PLAN

STATUS:

SHEET NO.
A2.02

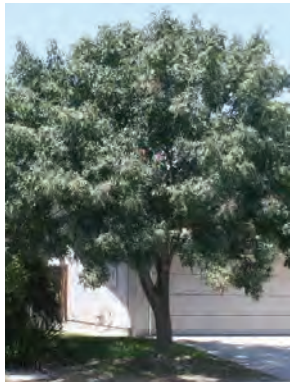




Lagerstroemia 'natchez'
"Natchez Crepemyrtle"



Olea europaea 'Swan Hill'
"Fruitless Olive"



Pistacia x Red Push
"Red Push Pistache"



Rhus integrifolioa
"Lemonade Berry"



Lavender x Intermedia 'Grosso'
"French Lavender"



Trachelospermum jasminoides
"Star Jasmine"



Coleonema pulchellum 'Sunset + Gold'
"Golden Breath of Heaven"



Verbena lilacina 'De La Mina'
"De la Mina Verbena"



Lomandra longifolio 'Breeze'
"Breeze Dwarf Mat Rush"

NORTH

CONCEPTUAL LANDSCAPE

SCALE 1/16" = 1'-0"

1

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BUENA PARK, CA 90621

ISSUE DATES

NO.	DESCRIPTION	DATE
1	1ST PRE-APP REVIEW	12/04/21

SEAL

JOB NO: 211101

SHEET TITLE
CONCEPTUAL LANDSCAPE

STATUS:

SHEET NO.
L1.01



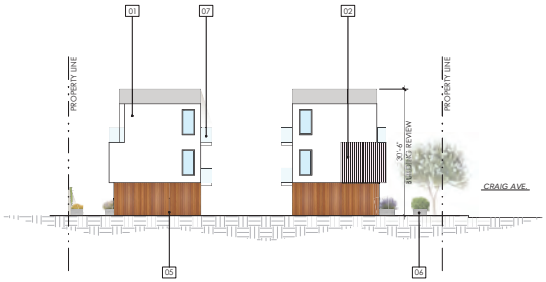
NORTH ELEVATION ALONG CRAIG AVENUE

SCALE 1/16" = 1'-0" 1



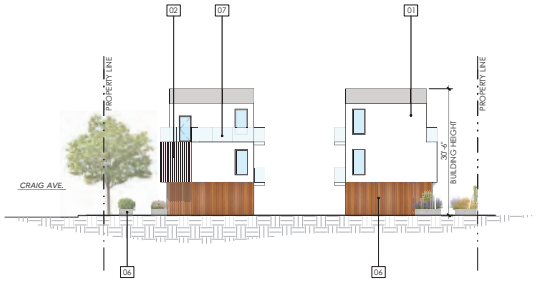
SOUTH ELEVATION

SCALE 1/16" = 1'-0" 2



EAST ELEVATION

SCALE 1/16" = 1'-0" 4



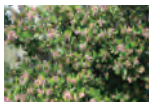
WEST ELEVATION

SCALE 1/16" = 1'-0" 3

PLANT PALETTE



Lagerstroemia 'natchez'
"Natchez Crepemyrtle"



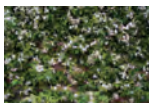
Rhus integrifolioa
"Lemonade Berry"



Lavender x Intermedia 'Grosso'
"French Lavender'



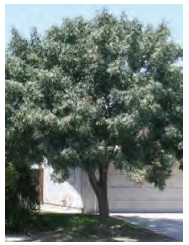
Olea europaea 'Swan Hill'
"Fruitless Olive"



Trachelospermum jasminoides
"Star Jasmine"



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"Red Push Pistache"



Verbena lilacina 'De La Mina'
"De la Mina Verbena"



Coleonema pulchellum
'Sunset + Gold'
"Golden Breath of Heaven"

MATERIALS

01 STUCCO WHITE

02 CORRUGATED METAL CHAMPAGNE

03 CORRUGATED METAL BLACK

04 METAL PANELING BLACK

05 WOOD SIDING CEDAR

06 BOARD FORM CONCRETE

07 GLASS GUARDRAIL

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ISSUE DATES

NO.	DESCRIPTION	DATE
1	1ST PRE-APP REVIEW	12/04/21

SEAL

JOB NO: 211101

SHEET TITLE

COLORED BUILDING ELEVATIONS

STATUS:

SHEET NO.

A3.01b

Attachment C

Site Photographs



Photograph 1: From the northwest corner of the project site, looking south along the western boundary.



Photograph 2: From the northwest corner of the project site, looking east along the northern boundary and Craig Avenue.



Photograph 3: From the northwest corner of the project site, looking diagonally southeast through the middle of the site.



Photograph 4: From the northeast corner of the project site, looking south along the eastern boundary.



Photograph 5: From the southeast corner of the project site, looking west along the southern boundary.



Photograph 6: From the southeast corner of the project site, looking north along the eastern boundary.



Photograph 7: From the southeast corner of the project site, looking diagonally northwest through the middle of the site.



Photograph 8: From the middle of the northern boundary, looking south through the middle of the site.



Photograph 9: From Craig Street which lies beyond the project site to the south, looking north through Brea Creek to the southern boundary of the site.

Attachment D

Potentially Occurring Special-Status Biological Resources

Table C-1: Potentially Occurring Special-Status Biological Resources

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
SPECIAL-STATUS WILDLIFE SPECIES				
Accipiter cooperii Cooper's hawk	Fed: None CA: WL	Found in mixed and deciduous forests, open woodlands, small woodlots, riparian woodlands, open and pinyon woodlands, and forested mountainous regions. Nests in more open areas with older, larger trees.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Accipiter striatus sharp-shinned hawk	Fed: None CA: WL	Found in mixed or coniferous forests, open deciduous woodlands, thickets, and forest edges. Usually nests in groves of coniferous trees in mixed woods and sometimes in dense deciduous tress or in pure coniferous forests with brush or clearings nearby. Winters in most types of forests or brushy areas. Avoids open country.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Agelaius tricolor tricolored blackbird	Fed: **THR** CA: SSC	Prefers wetland and grassland habitats. Historically nested in cattails, bullrushes, and willows, but has adapted to more agricultural settings with habitat loss. Commonly found in pasturelands, foraging in fields and farms.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Aimophila ruficeps canescens southern California rufous-crowned sparrow	Fed: None CA: WL	Widespread over the coastal lowlands and foothills in sage scrub, broken or burned chaparral, and grassland habitats with scattered shrubs.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Ammodramus savannarum grasshopper sparrow	Fed: None CA: SSC	Occurs in grasslands, prairies, hayfields, and open pastures with little to no scrub cover and often with bare ground. Winters in grass-dominated fields. Nests in dense grass cover.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Anniella stebbinsi southern California legless lizard	Fed: None CA: SSC	Mostly found in coastal sand dunes and a variety of interior habitats, including sandy washes and alluvial fans. They live mostly underground, burrowing in the loose sandy soils.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Antrozous pallidus pallid bat	Fed: None CA: SSC	Found in arid or semi-arid habitats, often in mountainous or rocky areas near water. Can also be found over open, sparsely vegetated grasslands, and oak and pine forested areas. Roosts in caves, rock crevices, mines, hollow trees, and buildings, but favor rocky outcrops.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Ardea alba great egret	Fed: None CA: None	Yearlong resident throughout California, except for the high mountains and deserts. Feeds and rests in fresh, and saline emergent wetlands, along the margins of estuaries, lakes, and slow-moving streams, on mudflats and salt ponds, and in irrigated croplands and pastures.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Ardea herodias great blue heron	Fed: None CA: None	Found in both saltwater and freshwater habitats along the open coast, marshes, sloughs, riverbanks, and lakes, to backyard ponds and flooded agricultural fields. Forage in grasslands and fields. Nests high off the ground, usually in tall trees.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Artemisiospiza belli belli Bell's sage sparrow	Fed: None CA: WL	Lives in shrubby areas of California and Baja California, including coastal sagebrush and chaparral, as well as in the Mojave Desert and San Clemente island.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Aspidoscelis tigris stejnegeri coastal whiptail	Fed: None CA: SSC	Found in valley-foothill hardwood, hardwood-conifer, riparian, mixed conifer, pine-juniper, chamise-redshank chaparral, mixed chaparral, desert scrub, desert wash, alkali scrub, and annual grasslands.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Athene cunicularia burrowing owl	Fed: None CA: SSC	Occurs in dry, open areas such as grasslands, prairies, savannas, deserts, farmlands, golf courses and other urban areas. Usually nests in old burrow of ground squirrel, or other small mammal.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Bombus crotchii Crotch bumble bee	Fed: None CA: CE	Exclusive to coastal California east towards the Sierra-Cascade Crest; less common in western Nevada.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Buteo regalis ferruginous hawk	Fed: None CA: WL	Found in open spaces like grasslands, prairie, sagebrush steppe, scrubland, and pinyon-juniper woodland edges. Nests in cliffs, utility structures, outcrops, boulders, shrubs, knolls, or haystacks, but prefers to nest in lone tree.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Buteo swainsoni Swainson's hawk	Fed: None CA: **THR**	Lives in open areas, including savannas, grasslands, steppes, and cultivated lands. Nests in isolated trees along drainages, windbreaks in fields, and around farmsteads.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Calyptae costae Costa's hummingbird	Fed: None CA: None	Found in desert scrub in the Sonoran and Mojave deserts and chaparral and sage scrub areas in coastal California. During non-breeding season, found mostly in similar dry habitats and well as parks, gardens, and higher elevation mountains.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Campylorhynchus brunneicapillus sandiegensis coastal cactus wren	Fed: None CA: SSC	Obligate inhabitants of coastal sage scrub. Nests in large cactus or thick shrubs, trees, or thickets.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Cardinalis cardinalis northern cardinal	Fed: None CA: WL	Found in woodland edges, thickets, suburban gardens, urban areas, and desert washes. Requires dense bushes for nesting.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Catostomus santaanae Santa Ana sucker	Fed: **THR** CA: None	Live in shallow portions of rivers and streams. Exist mostly in flash systems where currents range from swift in the canyons to sluggish in the bottomlands. Seeks refuge in backwater eddies and less turbulent areas during periods of heavier deluge.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Chaetura vauxi Vaux's swift	Fed: None CA: SSC	Nests and roosts in large hollow trees in mature and old-growth coniferous and mixed forests. Forages over forests, rivers, lakes, fields, and gaps in forests, such as burned areas.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Charadrius montanus mountain plover	Fed: None CA: SSC	Found in short grasslands, freshly-plowed fields, newly-sprouting grain fields, and sometimes in sod farms. Prefers short vegetation or bare ground with flat topography, particularly grazed areas or areas with fossorial rodents.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Chelonia mydas green turtle	Fed: **THR** CA: None	Found along the coastline in subtropical and temperate regions around islands, bays, and protected shores, especially in areas with seagrass beds.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Cicindela hirticollis gravida sandy beach tiger beetle	Fed: None CA: None	Found in unaltered ocean and estuarine beaches with significant sand dunes or beach grass areas above the high-tidal zone. Burrows into sand.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Cicindela latesignata western beach tiger beetle	Fed: None CA: None	Found in sandy open habitats, including river sandbars, and ocean beaches.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Cicindela senilis frosti senile tiger beetle	Fed: None CA: None	Found on or adjacent to coastal prairie terrace habitats. Forages, mates, and lays eggs in native grasslands marked by poorly-drained clay soils.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Circus hudsonius northern harrier	Fed: None CA: SSC	Found in both wet and dry habitats with good ground cover. Breed in wide open habitats within prairie grasslands and fields and marshes. Nests on the ground in dense grasses or wetland vegetation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Cistothorus palustris clarkae Clark's marsh wren	Fed: None CA: SSC	Found in both fresh and saltwater marshes and around the brushy edges of ponds. Forages in vegetation closer to water or at the water's surface. Breeds in marshes with tall vegetation such as cattails and bullrush.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Coccyzus americanus occidentalis western yellow-billed cuckoo	Fed: **THR** CA: **END**	In California, the breeding distribution is now thought to be restricted to isolated sites in Sacramento, Amargosa, Kern, Santa Ana, and Colorado River valleys. Obligate riparian species with a primary habitat association of willow-cottonwood riparian forest.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Contopus cooperi olive-sided flycatcher	Fed: None CA: SSC	Can be found in western coniferous forests from sea level to over 10,000 feet in elevation. Occurs commonly in burned forests and other open areas with many dead trees.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Crotalus ruber red-diamond rattlesnake	Fed: None CA: SSC	Inhabits arid scrub, coastal chaparral, oak and pine woodlands, rocky grasslands, and cultivated areas. Prefers the desert slopes of mountains and rocky desert flats.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
***Danaus plexippus plexuppus* pop. 1** monarch - California overwintering population	Fed: Candidate-END CA: SSC	Found in gardens, managed corridors, agricultural areas, and natural restored areas. Relies on milkweed (*Ascelpias* sp.) as its obligate larval host plant.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Diadophis punctatus modestus San Bernadino ringneck snake	Fed: None CA: SSC	Prefers moist habitats such as wet meadows, rocky hillsides, gardens, farmland, grassland, chaparral, mixed coniferous forests, and woodlands. Found under cover of rocks, wood bark, boards, and other surface debris.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Egretta thula snowy egret	Fed: None CA: None	Found in marshes, swamps, ponds, and shores and widespread throughout many aquatic habitats in both fresh and saltwater. If along the coast, prefers sheltered bays and estuaries. If inland, prefers extensive marshes and other large wetlands. Can sometimes be found foraging in dry fields.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Elanus leucurus white-tailed kite	Fed: None CA: **FP**	Common in savannahs, open woodlands, marshes, desert grasslands, partially cleared areas, and cultivated fields. Avoids heavily grazed areas. Breeds in lowland grasslands, agricultural wetlands, oak-woodland and savannah habitats, and riparian areas.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Empidonax traillii willow flycatcher	Fed: None CA: **END**	Found near streams or marshes but may be found in drier habitats. Winters around clearings and second growth in the tropics, especially near water. Breeds in thickets of deciduous trees and shrubs, especially willows or along woodland edges.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Emys marmorata western pond turtle	Fed: None CA: SSC	Resides in permanent and intermittent waters of rivers, creeks, small lakes and ponds, marshes, irrigations ditches, and reservoirs. Basks on land or near water on logs, branches, or boulders.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Eremophila alpestris actia California horned lark	Fed: None CA: WL	Inhabits open ground, generally avoiding areas with trees and bushes. Found in short-grass prairies, extensive lawns, plowed fields, stubble fields, beaches, lake flats, or high mountains.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Eumops perotis californicus western mastiff bat	Fed: None CA: SSC	Primarily a cliff-dwelling species, roost generally under exfoliating rock slabs. Roosts are generally high above the ground, usually allowing a clear vertical drop of at least three meters below the entrance for flight. In California, it is most frequently encountered in broad open areas. Its foraging habitat includes dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, and agricultural areas.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Euphydryas editha quino quinio checkerspot butterfly	Fed **END** CA: None	Occupies open areas of grasslands, coastal sage scrub, chamise chaparral, red chank chaparral, juniper woodland, and semi-desert scrub. Primary larval host plant is dwarf plantain (*Plantago pusilla*).	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Falco columbarius merlin	Fed: None CA: WL	Nests in trees in forested openings, edges, and along rivers. Can also be found nesting in towns and cities. Breeds in semi-open terrain. Lives in fairly-open country such as willow or birch scrub, shrubland, parks, grasslands, prairies, dunes, deserts, and moorland. Prefers low and medium-height vegetation with some trees.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Falco mexicanus prairie falcon	Fed: None CA: WL	Found in fairly dry open country, including grasslands, deserts, open hills, plains, and prairies, or above the tree line in high mountain areas. Winters in farmlands and around lakes and reservoirs, and sometimes in western cities. Nests on leges, cavities, or crevices of cliff faces, or uses abandoned nests of other raptors or ravens.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Falco peregrinus anatum American peregrine falcon	Fed: None CA: **FP**	Lives in a wide variety of habitats, from tundra to desert mountains. Found mostly along mountain ranges, river valleys, and coastlines, and generally near water. Often moves into cities and nests on building ledges.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Gila orcuttii arroyo chub	Fed: None CA: SSC	Occupies warm streams of the Los Angeles Plain, which provide muddy torrents during the winter, and clear quiet brooks in the summer, but can dry up in certain areas. Found in both slow-moving, and rapid sections, typically in areas deeper than 15 inches.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Glyptostoma gabrielense San Gabriel chestnut	Fed: None CA: None	Restricted to the San Gabriel Mountains, part of the Transverse Ranges situated between the Los Angeles Basin and the Mojave Desert.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Gopherus agassizii desert tortoise	Fed: **THR** CA: **THR**	Relies on areas with high plant species diversity, both for food and shelter. Lives in sandy flats and rocky foothills, including alluvial fans, washes, and canyons in desert areas with sparse vegetation. Constructs burrows ion sides of washes, hillsides, rock overhangs, or crevices in rocky areas.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Habroscelimorpha gabbii western tidal-flat tiger beetle	Fed: None CA: None	Lives in tidal mud flats, shorelines, herbaceous wetlands in salty coastal areas, beaches, and sand dunes. Prefers areas unobstructed by vegetation for running and flying in short bursts.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Hydroprogne caspia Caspian tern	Fed: None CA: None	Found in both fresh and saltwater environments, but favors more protected areas such as bays, lagoons, rivers, and lakes. Breeds along ocean coasts, barrier islands, and interior lakes and rivers. Nests in colonies on flat, open areas with little vegetation, allowing for predator detection.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Icteria virens yellow-breasted chat	Fed: None CA: SSC	Primarily found in tall, dense, relatively wide riparian woodlands and thickets of willows, vine tangles, and dense brush with well-developed understories. Nesting areas are associated with streams, swampy ground, and the borders of small ponds. Breeding habitat must be dense to provide shade and concealment. It winters south the Central America.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lanius ludovicianus loggerhead shrike	Fed: None CA: SSC	Inhabits open country with short vegetation and well-spaced shrubs or low trees, particularly those with spines or thorns. Common in agricultural fields, pastures, old orchards, riparian areas, desert scrublands, savannahs, prairies, golf courses, and cemeteries.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Larus californicus California gull	Fed: None CA: WL	Found in any open area where food can be found. Common in garbage dumps, pastures, scrublands, orchards, meadows, and farms. Winters along the Pacific coast, mostly in marine areas including mudflats, estuaries, deltas, and beaches.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lasionycteris noctivagans silver-haired bat	Fed: None CA: None	Resides mainly in forested habitats from lower elevations to over 3,600 feet. Roosts under loose bark, in dead trees or snags, inside hollow cavities of trees, in buildings, rock crevices, wood piles, and on cliff faces.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lasiurus blossevillii western red bat	Fed: None CA: None	Common in edge habitats adjacent to streams or open fields. Can sometimes be found in orchards an urban areas. Prefers riparian areas dominated by walnuts, oaks, willows, cottonwoods, and sycamores for roosting.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lasiurus cinereus hoary bat	Fed: None CA: SSC	Lives in an array of habitat types nationwide, but most common in arid desert regions in the Southwest. Winters along the coast. Roosts in tree foliage near the ends of branches.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lasiurus xanthinus western yellow bat	Fed: None CA: SSC	Found in riparian woodland habitats that include an abundance of trees such as cottonwood, sycamore, and white oak. Roosts in trees.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Laterallus jamaicensis coturniculus California black rail	Fed: None CA: **THR**, FP	Occurs in salt marshes, freshwater marshes, and wet meadows. Requires dense cover of upland vegetation to provide protection from predators.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Mycrotus californicus stephensi south coast marsh vole	Fed: None CA: SSC	Most common in grasslands, but also found in the coastal zone in saltwater and freshwater marshes, wet meadows, and areas along rivers and lakes Elevation ranges from sea level to over 5,900 feet.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Nannopterum auritum double-crested cormorant	Fed: None CA: WL	Found along coasts, in bays, lakes, rivers, and estuaries, along with most aquatic habitats. Nests in trees near or over water, on sea cliffs, or on the ground on islands.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Neotoma lepida intermedia San Diego desert woodrat	Fed: None CA: SSC	Found in a variety of shrub and desert habitats. Prefers large cactus patches and rock outcroppings. Common in sagebrush scrub areas, chaparral, desert, and within rocky sloped areas. Occurs at elevations up to 9,500 feet.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Nycticorax nycticorax black-crowned night heron	Fed: None CA: None	Found in a variety of aquatic habitats around both fresh and salt water including marshes, rivers, ponds, mangrove swamps, tidal flats, canals, and rice fields. Nests in groves of trees, in thickets, or on the ground, usually on islands or above the water.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Nyctinomops femorosaccus pocketed free-tailed bat	Fed: None CA: SSC	Roosts in crevices of rugged cliffs, high rocky outcrops and slopes, buildings, caves, and under roof tiles. Found in desert shrub and pine-oak forest communities.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
***Oncorhynchus mykiss irideus* pop. 10** steelhead – southern California DPS	Fed: **END** CA: None	Found in permanent coastal streams from San Diego to the Smith River.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Pandion haliaetus osprey	Fed: None CA: WL	Found near water where large numbers of fish are present. Most common around major coastal estuaries and salt marshes, but also seen around lakes, reservoirs, and rivers. Nests in areas with open surroundings on top of snags, treetops, cliffs, or manmade platforms.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Passerculus sandwichensis beldingi Belding's savannah sparrow	Fed: None CA: **END**	Dependent on wetland habitats. Resides year-round in the coastal salt marshes in southern California. Nests in pickleweed salt marsh vegetation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Passerculus sandwichensis rostratus large-billed savannah sparrow	Fed: None CA: SSC	Limited to open, low salt marsh vegetation, including grasses, pickleweed, and iodine bush. Almost entirely restricted to shorelines and marshes.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Phrynosoma blainvillii coast horned lizard	Fed: None CA: SSC	Found in a wide variety of vegetation types including coastal sage scrub, annual grassland, chaparral, oak woodland, riparian woodland and coniferous forest. The key elements of such habitats are loose, fine soils with a high sand fraction; an abundance of native ants or other insects; and open areas with limited overstory for basking and low, but relatively dense shrubs for refuge.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Polioptila californica californica coastal California gnatcatcher	Fed: **THR** CA: SSC	Obligate resident of sage scrub habitats that are dominated by California sagebrush (*Artemisia californica*). This species generally occurs below 750 feet elevation in coastal regions and below 1,500 feet inland. It prefers habitat with more low-growing vegetation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Polioptila melanura black-tailed gnatcatcher	Fed: None CA: SSC	Lives in desert brush, ravines, dry washes, mesquites. Common in many scrub habitats with varied growth of mesquites, acacias, and palo verde trees, but can also be found in low acacia scrub and on open flats with creosote bush.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Progne subis purple martin	Fed: None CA: SSC	Favors meadows, grasslands, lakes and ponds, beaver dams, and flooded pastures for foraging areas. Can also be found in more urban areas like farms, croplands, parks, and gardens. Nests in tree cavities, or in holes in buildings and cliffs.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Pyrocephalus rubinus vermilion flycatcher	Fed: None CA: SSC	Occupies desert riparian habitat, particularly cottonwoods, willows, mesquite, and other large desert riparian trees, in habitat adjacent to irrigated fields, irrigation ditches, pastures, and other open, mesic areas where it can forage.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Rallus obsoletus levipes light-footed Ridgway's rail	Fed: None CA: SSC	Found in coastal salt marshes and lagoons, or in brackish and freshwater habitats with cattails and bullrush. Nests in strands of dense cordgrass.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
***Rhinichthys osculus* ssp. 8** Santa Ana speckled dace	Fed: None CA: SSC	Inhabits the Santa Ana, San Jacinto, San Gabriel, and Los Angeles River systems. Prefers perennial streams fed by cool springs with overhanging riparian vegetation and shallow gravel riffles for spawning.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Riparia riparia bank swallow	Fed: None CA: **THR**	Lives in low areas along rivers, streams, ocean coasts and reservoirs. Requires vertical banks and cliffs to form colonies of nests. Common around natural banks and waterways, and human-made sites such as sand and gravel quarries.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Selasphorus rufus rufous hummingbird	Fed: None CA: None	Breeds in open or shrubby areas, forest openings, yards, parks, and sometimes forests, thickets, swamps, and meadows from sea level to about 6,000 feet in elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Setophaga petechia yellow warbler	Fed: None CA: SSC	Nests over all of California except the Central Valley, the Mojave Desert region, and high altitudes and the eastern side of the Sierra Nevada. Winters along the Colorado River and in parts of Imperial and Riverside Counties. Nests in riparian areas dominated by willows, cottonwoods, sycamores, or alders or in mature chaparral. May also use oaks, conifers, and urban areas near stream courses.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Sorex ornatus salicornicus southern California saltmarsh shrew	Fed: None CA: SSC	Restricted to coastal salt marshes in Los Angeles, Orange, and Ventura counties. Found in tidal marshes characterized by cordgrass, bulrush, and cattail. Requires dense, low-lying cover with an abundance of small invertebrates for food.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Spea hamondii western spadefoot	Fed: None CA: SSC	Occurs in open areas with sandy or gravelly soils in a variety of habitats including mixed woodlands, grasslands, coastal sage scrub, chaparral, sandy washes, lowlands, river floodplains, alluvial fans, playas, alkali flats, foothills, and mountains. Requires rainpools free of bullfrogs, fish, or crayfish for breeding.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Spizella breweri Brewer's sparrow	Fed: None CA: None	Lives in arid sagebrush steppe habitat and among subalpine and dwarf shrub communities. Forages and nests among sagebrush habitats.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Sternula antillarum browni California least tern	Fed: **END** CA: **END**	Found on beaches, in bays, lagoons, large rivers, and salt flats. Generally, along the coast with sand beaches close to extensive shallow waters for feeding. Nests on beaches, mudflats, and sand dunes, usually near shallow estuaries and lagoons with access to the near open ocean. Requires undisturbed stretches of sparsely vegetated sandy or gravely ground for nesting.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Taxidea taxus American badger	Fed: None CA: SSC	Lives in open areas like plains and prairies, farmlands, and the edges of woodlands. Prefers dry, open grasslands.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
***Thamnophis sirtalis* pop. 1** south coast gartersnake	Fed: None CA: SSC	Found in areas with permanent water, low gradient topography, and dense multistoried riparian vegetation. Restricted to shallow, freshwater aquatic habitats such as wetlands and marshes. Requires open water for foraging.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Vireo bellii pusillus least Bell's vireo	Fed: **END** CA: **END**	Inhabits low-elevation riparian habitats with a dense shrub understory near water. Prefers an area with both a canopy and shrub layer. Prefers to nest in willows, but will use other shrubs, trees, and vines. Found below 2,000 feet elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
SPECIAL-STATUS PLANT SPECIES				
Astragalus hornii* var. *hornii Horn's milk-vetch	Fed: None CA: None CNPS: 1B.1	Occurs in lake margins in playas, meadows and seeps. Found at elevations ranging from 197 to 2,789 feet. Blooming period is from May to October.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Atriplex parishii Parish's brittlescale	Fed: None CA: None CNPS: 1B.1	Can be found along the immediate coastline and the Channel Islands. Grows in saline and alkaline soils, such as those in dry lakebeds and ephemeral vernal pools. Blooms from June to October.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Calochortus catalinae Catalina mariposa-lily	Fed: None CA: None CNPS: 4.2	Most often found in chaparral or coastal scrub ecosystems and sometimes in grasslands and oak or pine woodlands. Blooms from April to June.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Calochortus plummerae Plummer's mariposa-lily	Fed: None CA: None CNPS: 4.2	Found in chaparral or coastal scrub ecosystems, and sometimes in grasslands and oak or pine woodlands. Blooms from May to July. Found at elevations of up to 5,580 feet.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Calochortus weedii var. intermedius intermediate mariposa-lily	Fed: None CA: None CNPS: 1B.2	Found in coastal and peninsular ranges, Grows in heavy rocky soils from sea level to 6,200 feet. Blooms from June to July.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Calystegia felix lucky morning-glory	Fed: None CA: None CNPS: 1B.1	Grows in gentle alluvial slopes with silty loam soils, wetlands, and marshy places. Blooms from April to June.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Camissoniopsis lewisii Lewis' evening primrose	Fed: None CA: None CNPS: 3	Found in coastal bluff scrub, cismontane woodland, coastal dunes, coastal scrub, and valley and foothill grassland in sandy or clay soils. From 0 to 984 feet in elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Centromadia parryi ssp. australis southern tarplant	Fed: None CA: None CNPS: 1B.1	Occurs in disturbed areas near coastal salt marshes, grasslands, vernal pools, and coastal sage scrub habitat. From 0 to 1,575 feet in elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Chloropyron maritimum ssp. maritimum salt marsh birds-beak	Fed: **END** CA: **END** CNPS: 1B.2	Found in coastal marshes from San Luis Obispo County to Northern Baja California, Mexico. Common among tidal wetland habitats. Blooms from May to October.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Convolvulus simulans small-flowered morning-glory	Fed: None CA: None CNPS: 4.2	Found in annual grasslands, coastal sage scrub, and chaparral habitats. Blooms from April to June.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Dudleya multicaulis many-stemmed dudleya	Fed: None CA: None CNPS: 1B.2	Found on dry stony outcrops, coastal sage scrub, and chaparral habitats at up to 2,000 feet. Most common in Orange County along coastal plains in heavy clay soils.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Juglans californica southern California black walnut	Fed: None CA: None CNPS: 4.2	Occurs in alluvial soils in chaparral, cismontane woodland, coastal scrub, and riparian woodlands. From 15 to 5,875 feet in elevation. Blooming period is from May to June.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Juncus acutus ssp. leopoldii southwestern spiny rush	Fed: None CA: None CNPS: 4.2	Grows in coastal saltmarshes and dunes and disturbed saline areas as well as in alkaline, wet places in the interior along wetlands and ponds.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lasthenia glabrata ssp. coulteri Coulter's goldfields	Fed: None CA: None CNPS: 1B.1	Grows in heavy soils, vernal pools, low alkaline fields, hillsides and grasslands and alkaline marshes up to 4,265 feet in elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Lycium californicum California box-thorn	Fed: None CA: None CNPS: 4.2	Common in coastal sage scrub on coastal bluffs, mesas, and the boarders of estuaries, but also found in low, sparse, saline desert areas. Blooms from March to July.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Nama stenocarpa mud nama	Fed: None CA: None CNPS: 2B.2	Occurs in wetlands, riparian areas, lake-margins, streambanks, and along the edges of water. Blooms from January to July.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Nasturtium gambelii Gambel's water cress	Fed: **END** CA: **THR** CNPS: 1B.1	Brackish marsh, freshwater marsh, swamps, and wetlands. From 16 to 1,083 feet in elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Navarretia prostrata prostrate vernal pool navarretia	Fed: None CA: None CNPS: 1B.2	Found in moist to wet places, including alkaline floodplains and vernal pools. Blooms from April to July.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Nemacaulis denudata var. denudata coast woolly-heads	Fed: None CA: None CNPS: 1B.2	Found in coastal sand dunes among coastal strand communities. Blooms from March to August.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Orcuttia californica California Orcutt grass	Fed: **END** CA: **END** CNPS: 1B.1	Occurs in large and deep vernal pools, beginning as an aquatic plant with floating leaves, then growing and flowering as the water recedes and the vernal pool has dried. Blooms from April to July.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Phacelia ramosissima var. austrolitoralis South coast branching phacelia	Fed: None CA: None CNPS: 3.2	Found from the coasts to valleys, foothills, and mountain slopes. Can occasionally be found at elevations of over 10,000 feet. Grows in chaparral, creosote bush scrub, coastal sage scrub, pinyon-juniper woodland, southern oak woodland and central oak woodland communities. Blooms from March to May.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Phacelia stellaris Brand's star phacelia	Fed: None CA: None CNPS: 1B.1	Found in along the coast in open areas such as sand dunes, sandy openings, washes, or flood plains, and among coastal scrub communities. Blooms from March to June.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Quercus engelmannii Engelmann oak	Fed: None CA: None CNPS: 4.2	Grows along the foothills from Pasadena through Baja California. Requires elevations of 500 to 4,000 feet. Found in mesas, savannas, and woodlands above the dry coastal plain.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Sagittaria sanfordii Sanford's arrowhead	Fed: None CA: None CNPS: 1B.2	Grows in shallow, freshwater marshes and swamps at elevations lover than 2,100 feet. Blooms from May to October.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Sidalcea neomexicana Salt Spring checkerbloom	Fed: None CA: None CNPS: 2B.2	Habitat includes chaparral, coastal scrub, lower montane coniferous forest, plays, and mojavean desert scrub. Found at elevations ranging from 49 to 5,020 feet. Blooming period is from March to June.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

Scientific Name Common Name	**Status**	**Habitat**	**Observed Onsite**	**Potential to Occur**
Suaeda esteroa estuary seablite	Fed: None CA: None CNPS: 1B.2	Found in estuaries and salt marshes along the coast. Sometimes found inland in riparian communities. Blooms from May to October.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Suaeda taxifolia woolly seablite	Fed: None CA: None CNPS: 4.2	Grows in saline habitats such as salt marshes, beaches, dunes, edges and scrub. More common along the coast, but can be found in wetland riparian communities as well. Blooms year-round.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Symphyotrichum defoliatum San Bernardino aster	Fed: None CA: None CNPS: 1B.2	Grows in grasslands and disturbed areas in the San Gabriel and San Bernardino Mountains and Peninsular Range. Occurs in vernally wet sites including ditches, streams, and springs in many plant communities. From 6 to 6,693 feet in elevation.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
SPECIAL-STATUS PLANT COMMUNITIES				
California Walnut Woodland	CDFW Sensitive Habitat	Includes other species such as live oak, toyon, and shrubs. One of the most rare communities in California.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.
Southern California Salt Marsh	CDFW Sensitive Habitat	Occurs sporadically along the coast. Found in bays, inlets, and other protected areas subject to tidal flooding. Supports halophytic plant species, adapted to higher levels of saline, and lower oxygen content. Species diversity is relatively low.	No	**Presumed Absent**. No suitable habitat is present within or adjacent to the project site.

U.S. Fish and Wildlife Service (USFWS) - Federal
END- Federal Endangered
THR- Federal Threatened
Candidate END – Under Review

California Department of Fish and Wildlife (CDFW) - California
END- California Endangered
SSC- California Species of Concern
WL- Watch List
FP- California Fully Protected

California Native Plant Society (CNPS)
California Rare Plant Rank
1A- Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
1B- Plants Rare, Threatened, or Endangered in California and Elsewhere
2B- Plants Rare, Threatened, or Endangered in California, but More Common Elsewhere
4- Plants of Limited Distribution – A Watch List

Threat Ranks
0.1- Seriously threatened in California
0.2- Moderately threatened in California
0.3- Not very threatened in California

Attachment E

Regulations

Special status species are native species that have been afforded special legal or management protection because of concern for their continued existence. There are several categories of protection at both federal and state levels, depending on the magnitude of threat to continued existence and existing knowledge of population levels.

Federal Regulations

Endangered Species Act of 1973

Federally listed threatened and endangered species and their habitats are protected under provisions of the Federal Endangered Species Act (ESA). Section 9 of the ESA prohibits "take" of threatened or endangered species. "Take" under the ESA is defined as to "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of the specifically enumerated conduct." The presence of any federally threatened or endangered species that are in a project area generally imposes severe constraints on development, particularly if development would result in "take" of the species or its habitat. Under the regulations of the ESA, the United States Fish and Wildlife Service (USFWS) may authorize "take" when it is incidental to, but not the purpose of, an otherwise lawful act.

Critical Habitat is designated for the survival and recovery of species listed as threatened or endangered under the ESA. Critical Habitat includes those areas occupied by the species, in which are found physical and biological features that are essential to the conservation of an ESA listed species and which may require special management considerations or protection. Critical Habitat may also include unoccupied habitat if it is determined that the unoccupied habitat is essential for the conservation of the species.

Whenever federal agencies authorize, fund, or carry out actions that may adversely modify or destroy Critical Habitat, they must consult with USFWS under Section 7 of the ESA. The designation of Critical Habitat does not affect private landowners, unless a project they are proposing uses federal funds, or requires federal authorization or permits (e.g., funding from the Federal Highway Administration or a permit from the U.S. Army Corps of Engineers (Corps)).

If USFWS determines that Critical Habitat will be adversely modified or destroyed from a proposed action, the USFWS will develop reasonable and prudent alternatives in cooperation with the federal institution to ensure the purpose of the proposed action can be achieved without loss of Critical Habitat. If the action is not likely to adversely modify or destroy Critical Habitat, USFWS will include a statement in its biological opinion concerning any incidental take that may be authorized and specify terms and conditions to ensure the agency is in compliance with the opinion.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (16 U.S. Government Code [USC] 703) makes it unlawful to pursue, capture, kill, possess, or attempt to do the same to any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the countries of the former Soviet Union, and authorizes the U.S. Secretary of the Interior to protect and migratory birds, their occupied nests, and their eggs (16 USC 703; 50 CFR 10, 21).

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

In 1972, the MBTA was amended to include protection for migratory birds of prey (e.g., raptors). Six families of raptors occurring in North America were included in the amendment: Accipitridae (kites, hawks, and eagles); Cathartidae (New World vultures); Falconidae (falcons and caracaras); Pandionidae (ospreys); Strigidae (typical owls); and Tytonidae (barn owls). The provisions of the 1972 amendment to the MBTA protects all species and subspecies of the families listed above. The MBTA protects over 800 species including geese, ducks, shorebirds, raptors, songbirds and many relatively common species.

State Regulations

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) provides for the protection of the environment within the State of California by establishing State policy to prevent significant, avoidable damage to the environment through the use of alternatives or mitigation measures for projects. It applies to actions directly undertaken, financed, or permitted by State lead agencies. If a project is determined to be subject to CEQA, the lead agency will be required to conduct an Initial Study (IS); if the IS determines that the project may have significant impacts on the environment, the lead agency will subsequently be required to write an Environmental Impact Report (EIR). A finding of non-significant effects will require either a Negative Declaration or a Mitigated Negative Declaration instead of an EIR. Section 15380 of the CEQA Guidelines independently defines "endangered" and "rare" species separately from the definitions of the California Endangered Species Act (CESA). Under CEQA, "endangered" species of plants or animals are defined as those whose survival and reproduction in the wild are in immediate jeopardy, while "rare" species are defined as those who are in such low numbers that they could become endangered if their environment worsens.

California Endangered Species Act (CESA)

In addition to federal laws, the state of California implements the CESA which is enforced by CDFW. The CESA program maintains a separate listing of species beyond the FESA, although the provisions of each act are similar.

State-listed threatened and endangered species are protected under provisions of the CESA. Activities that may result in "take" of individuals (defined in CESA as; "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill") are regulated by CDFW. Habitat degradation or modification is not included in the definition of "take" under CESA. Nonetheless, CDFW has interpreted "take" to include the destruction of nesting, denning, or foraging habitat necessary to maintain a viable breeding population of protected species.

The State of California considers an endangered species as one whose prospects of survival and reproduction are in immediate jeopardy. A threatened species is considered as one present in such small numbers throughout its range that it is likely to become an endangered species in the near future in the

absence of special protection or management. A rare species is one that is considered present in such small numbers throughout its range that it may become endangered if its present environment worsens. State threatened and endangered species are fully protected against take, as defined above.

The CDFW has also produced a species of special concern list to serve as a species watch list. Species on this list are either of limited distribution or their habitats have been reduced substantially, such that a threat to their populations may be imminent. Species of special concern may receive special attention during environmental review, but they do not have formal statutory protection. At the federal level, USFWS also uses the label species of concern, as an informal term that refers to species which might be in need of concentrated conservation actions. As the Species of Concern designated by USFWS do not receive formal legal protection, the use of the term does not necessarily ensure that the species will be proposed for listing as a threatened or endangered species.

Fish and Game Code

Fish and Game Code Sections 3503, 3503.5, 3511, and 3513 are applicable to natural resource management. For example, Section 3503 of the Code makes it unlawful to destroy any birds' nest or any birds' eggs that are protected under the MBTA. Further, any birds in the orders Falconiformes or Strigiformes (Birds of Prey, such as hawks, eagles, and owls) are protected under Section 3503.5 of the Fish and Game Code which makes it unlawful to take, possess, or destroy their nest or eggs. A consultation with CDFW may be required prior to the removal of any bird of prey nest that may occur on a project site. Section 3511 of the Fish and Game Code lists fully protected bird species, where the CDFW is unable to authorize the issuance of permits or licenses to take these species. Pertinent species that are State fully protected by the State include golden eagle (*Aquila chrysaetos*) and white-tailed kite (*Elanus leucurus*). Section 3513 of the Fish and Game Code makes it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA.

Native Plant Protection Act

Sections 1900–1913 of the Fish and Game Code were developed to preserve, protect, and enhance Rare and Endangered plants in the state of California. The act requires all state agencies to use their authority to carry out programs to conserve Endangered and Rare native plants. Provisions of the Native Plant Protection Act prohibit the taking of listed plants from the wild and require notification of the CDFW at least ten days in advance of any change in land use which would adversely impact listed plants. This allows the CDFW to salvage listed plant species that would otherwise be destroyed.

California Native Plant Society Rare and Endangered Plant Species

Vascular plants listed as rare or endangered by the CNPS, but which have no designated status under FESA or CESA are defined as follows:

California Rare Plant Rank

1A- Plants Presumed Extirpated in California and either Rare or Extinct Elsewhere

1B- Plants Rare, Threatened, or Endangered in California and Elsewhere

2A- Plants Presumed Extirpated in California, But More Common Elsewhere

2B- Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere

3- Plants about Which More Information is Needed - A Review List

4- Plants of Limited Distribution - A Watch List

Threat Ranks

.1- Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2- Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

.3- Not very threatened in California (<20% of occurrences threatened / low degree and immediacy of threat or no current threats known).

There are three key agencies that regulate activities within inland streams, wetlands, and riparian areas in California. The Corps Regulatory Branch regulates activities 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 CDFG regulates activities under the Fish and Game Code Section 1600-1616, and the Regional Board regulates activities pursuant to Section 401 of the CWA and the California Porter-Cologne Water Quality Control Act.

Federal Regulations

Section 404 of the Clean Water Act

Since 1972, the Corps and U.S. Environmental Protection Agency (EPA) have jointly regulated the filling of "waters of the U.S.," including wetlands, pursuant to Section 404 of the Clean Water Act (CWA). The Corps has regulatory authority over the discharge of dredged or fill material into the waters of the United States under Section 404 of the CWA. The Corps and EPA define "fill material" to include any "material placed in waters of the United States where the material has the effect of: (i) replacing any portion of a water of the United States with dry land; or (ii) changing the bottom elevation of any portion of the waters of the United States." Examples include, but are not limited to, sand, rock, clay, construction debris, wood chips, and "materials used to create any structure or infrastructure in the waters of the United States." In order to further define the scope of waters protected under the CWA, the Corps and EPA published the Clean Water Rule on June 29, 2015. Pursuant to the Clean Water Rule, the term "*waters of the United States*" is defined as follows:

(i) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.

(ii) All interstate waters, including interstate wetlands[1].

(iii) The territorial seas.

(iv) All impoundments of waters otherwise defined as waters of the United States under the definition.

(v) All tributaries[2] of waters identified in paragraphs (i) through (iii) mentioned above.

(vi) All waters adjacent[3] to a water identified in paragraphs (i) through (v) mentioned above, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.

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1 The term *wetlands* means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

2 The terms *tributary* and *tributaries* each mean a water that contributes flow, either directly or through another water (including an impoundment identified in paragraph (iv) mentioned above), to a water identified in paragraphs (i) through (iii) mentioned above, that is characterized by the presence of the physical indicators of a bed and banks and an ordinary high water mark.

3 The term *adjacent* means bordering, contiguous, or neighboring a water identified in paragraphs (i) through (v) mentioned above, including waters separated by constructed dikes or barriers, natural river berms, beach dunes, and the like.

(vii) All prairie potholes, Carolina bays and Delmarva bays, Pocosins, western vernals pools, Texas coastal prairie wetlands, where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (i) through (iii) meantioned above.

(viii) All waters located within the 100-year floodplain of a water identified in paragraphs (i) through (iii) mentioned above and all waters located within 4,000 feet of the high tide line or ordinary high water mark of a water identified in paragraphs (i) through (v) mentioned above, where they are determined on a case-specific basis to have a significant nexus to a waters identified in paragraphs (i) through (iii) mentioned above.

The following features are not defined as "waters of the United States" even when they meet the terms of paragraphs (iv) through (viii) mentioned above:

(i) Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the Clean Water Act.

(ii) Prior converted cropland.

(iii) The following ditches:

- (A) Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.
- (B) Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.
- (C) Ditches that do not flow, either directly or through another water, into a water of the United States as identified in paragraphs (i) through (iii) of the previous section.

(iv) The following features:

- (A) Artificially irrigated areas that would revert to dry land should application of water to that area cease;
- (B) Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds;
- (C) Artificial reflecting pools or swimming pools created in dry land;
- (D) Small ornamental waters created in dry land;
- (E) Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water;
- (F) Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of a tributary, non-wetland swales, and lawfully constructed grassed waterways; and
- (G) Puddles.

(v) Groundwater, including groundwater drained through subsurface drainage systems.

(vi) Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.

(vii) Wastewater recycling structures constructed in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

Section 401 of the Clean Water Act

Pursuant to Section 401 of the CWA, any applicant for a federal license or permit to conduct any activity which may result in any discharge to waters of the United States must provide certification from the State or Indian tribe in which the discharge originates. This certification provides for the protection of the physical, chemical, and biological integrity of waters, addresses impacts to water quality that may result from issuance of federal permits, and helps insure that federal actions will not violate water quality standards of the State or Indian tribe. In California, there are nine Regional Water Quality Control Boards (Regional Board) that issue or deny certification for discharges to waters of the United States and waters of the State, including wetlands, within their geographical jurisdiction. The State Water Resources Control Board assumed this responsibility when a project has the potential to result in the discharge to waters within multiple Regional Boards.

State Regulations

Fish and Game Code

Fish and Game Code Sections 1600 et. seq. establishes a fee-based process to ensure that projects conducted in and around lakes, rivers, or streams do not adversely impact fish and wildlife resources, or, when adverse impacts cannot be avoided, ensures that adequate mitigation and/or compensation is provided.

Fish and Game Code Section 1602 requires any person, state, or local governmental agency or public utility to notify the CDFW before beginning any activity that will do one or more of the following:

(1) substantially obstruct or divert the natural flow of a river, stream, or lake;
(2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or
(3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake.

Fish and Game Code Section 1602 applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes in the State. CDFW's regulatory authority extends to include riparian habitat (including wetlands) supported by a river, stream, or lake regardless of the presence or absence of hydric soils and saturated soil conditions. Generally, the CDFW takes jurisdiction to the top of bank of the stream or to the outer limit of the adjacent riparian vegetation (outer drip line), whichever is greater. Notification is generally required for any project that will take place in or in the vicinity of a river, stream, lake, or their tributaries. This includes rivers or streams that flow at least periodically or permanently through a bed or channel with banks that support fish or other aquatic life and watercourses having a surface or subsurface flow that support or have supported riparian vegetation. A Section 1602 Streambed Alteration Agreement would be required if impacts to identified CDFW jurisdictional areas occur.

Porter Cologne Act

The California *Porter-Cologne Water Quality Control Act* gives the State very broad authority to regulate waters of the State, which are defined as any surface water or groundwater, including saline waters. The Porter-Cologne Act has become an important tool in the post SWANCC and Rapanos regulatory environment, with respect to the state's authority over isolated and insignificant waters. Generally, any person proposing to discharge waste into a water body that could affect its water quality must file a Report of Waste Discharge in the event that there is no Section 404/401 nexus. Although "waste" is partially defined as any waste substance associated with human habitation, the Regional Board also interprets this to include fill discharged into water bodies.

Appendix C

Cultural Resources Assessment

CULTURAL RESOURCES ASSESSMENT

Craig Apartments Project

Buena Park, Orange County, California

Prepared for:

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Prepared by:

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Project No. KIM2220

Data Base Information:
Type of Study: Intensive Survey
Resources Recorded: None
Keywords: Buena Park
USGS Quadrangles: 7.5-minute *La Habra, California* (1981)

BCRCONSULTING LLC

October 19, 2022

MANAGEMENT SUMMARY

BCR Consulting LLC (BCR Consulting) is under contract to Kimley-Horn to conduct a Cultural Resources Assessment of the Craig Apartments Project (project) in the City of Buena Park (City), Orange County, California. The work is being performed pursuant to the California Environmental Quality Act (CEQA). A cultural resources records search, pedestrian field survey, Sacred Lands File search with the Native American Heritage Commission (NAHC), and paleontological overview were conducted for the project.

The records search revealed that six cultural resource studies have taken place resulting in the recording of three cultural resources within a one half-mile radius of the project site. The project site has never been subject to previous cultural resources assessment and no cultural resources have been previously recorded within its boundaries. During the field survey, BCR Consulting archaeologists did not identify any cultural resources (including prehistoric or historic-period archaeological sites or historic-period buildings) within the project boundaries. Based on these results, BCR Consulting recommends a finding of no impacts to historical resources under CEQA. BCR Consulting also recommends that no additional cultural resources work, or monitoring is necessary during proposed activities associated with the development of the project site. Therefore, no significant impacts related to archaeological or historical resources is anticipated and no further investigations are recommended for the three project sites unless:

- the proposed project is changed to include areas not subject to this study;
- the proposed project is changed to include the construction of additional facilities;
- cultural materials are encountered during project activities.

Although the current study has not indicated sensitivity for cultural resources within the project site boundaries, ground disturbing activities always have the potential to reveal buried deposits not observed on the surface during previous surveys. Prior to the initiation of ground-disturbing activities, field personnel should be alerted to the possibility of buried prehistoric or historic cultural deposits. In the event that field personnel encounter buried cultural materials, work in the immediate vicinity of the find should cease and a qualified archaeologist should be retained to assess the significance of the find. The qualified archaeologist shall have the authority to stop or divert construction excavation as necessary. If the archaeologist finds that any cultural resources present meet eligibility requirements for listing on the California Register or the National Register, plans for the treatment, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing include:

- historic artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;
- historic structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements;
- prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates;
- groundstone artifacts, including mortars, pestles, and grinding slabs;
- dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks.

Results are pending for the Sacred Lands File search with the NAHC. The State Legislature added requirements regarding tribal cultural resources for CEQA in Assembly Bill 52 (AB 52) that took effect July 1, 2015. AB 52 requires consultation with California Native American tribes and consideration of tribal cultural resources in the CEQA process. By including tribal cultural resources early in the CEQA process, the legislature intended to ensure that local and Tribal governments, public agencies, and project proponents would have information available, early in the project planning process, to identify and address potential adverse impacts to tribal cultural resources. By taking this proactive approach, the legislature also intended to reduce the potential for delay and conflicts in the environmental review process. To help determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a Proposed Project. Since the City will initiate and carry out the required AB52 Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff is available to answer questions and address concerns as necessary.

According to CEQA Guidelines, projects subject to CEQA must determine whether the project would "directly or indirectly destroy a unique paleontological resource". The Paleontological Overview provided in Appendix C has recommended that:

> The geologic units underlying this project are mapped entirely as alluvial silt, sand and gravel deposits dating from the Holocene period (Dibblee, 2001). Holocene alluvial units are considered to be of high preservation value, but material found is unlikely to be fossil material due to the relatively modern associated dates of the deposits. However, if development requires any substantial depth of disturbance, the likelihood of reaching Pleistocene alluvial sediments would increase. The Western Science Center does not have localities within the project area or within a 1 mile radius.
>
> While the presence of any fossil material is unlikely, if excavation activity disturbs deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods, the material would be scientifically significant. Excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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INTRODUCTION

BCR Consulting LLC (BCR Consulting) is under contract to Kimley-Horn to conduct a Cultural Resources Assessment of the Craig Apartments Project (project) in the City of Buena Park (City), Orange County, California. An intensive-level pedestrian cultural resources survey of the project site was undertaken pursuant to the California Environmental Quality Act (CEQA). The project site is located in a non-sectioned portion of Township 3 South, Range 11 West, San Bernardino Baseline and Meridian. It is depicted on the United States Geological Survey (USGS) *La Habra, California* (1981) 7.5-minute topographic quadrangle (Figure 1).

Regulatory Setting

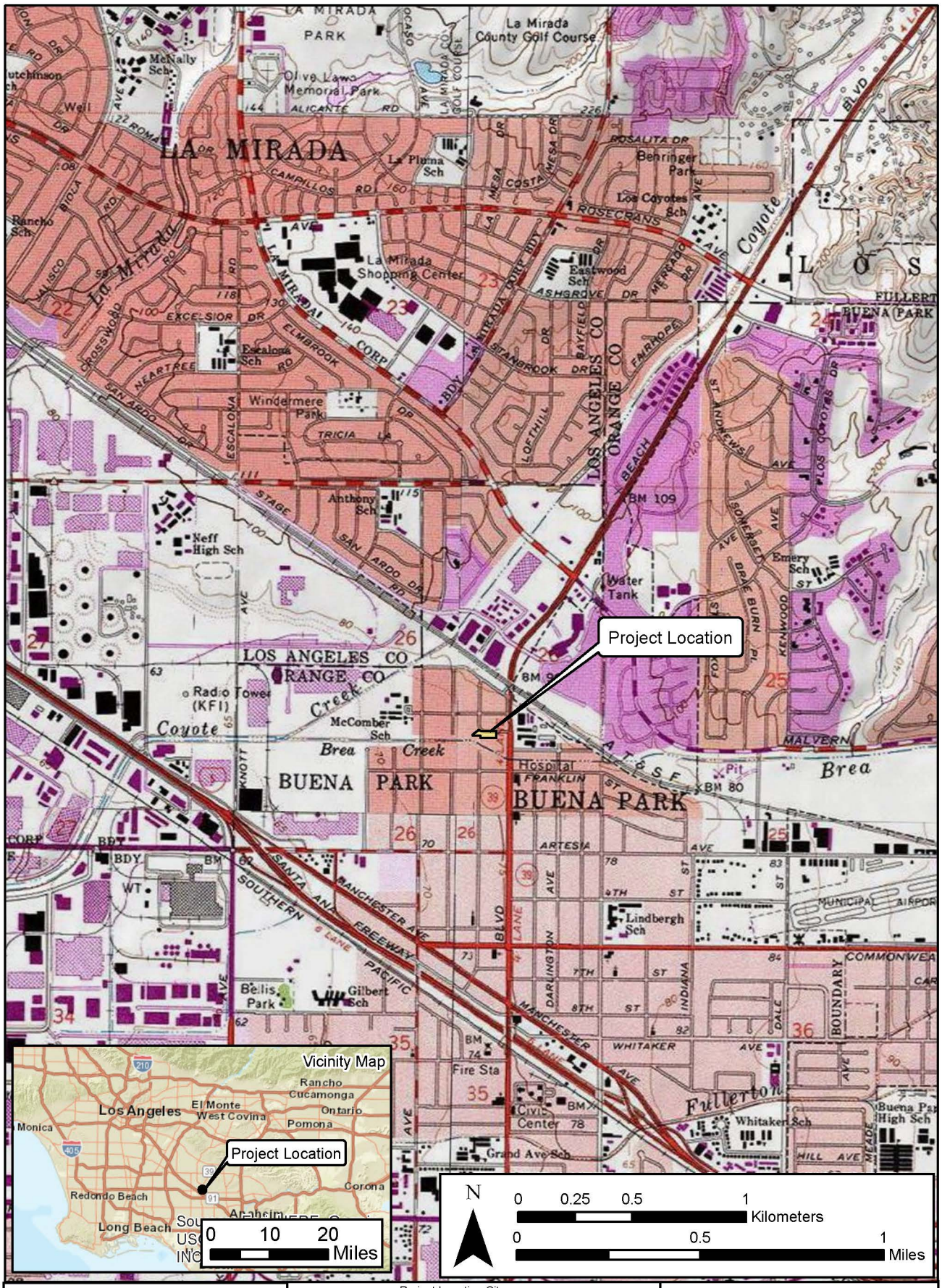
The California Environmental Quality Act. CEQA applies to all discretionary projects undertaken or subject to approval by the state's public agencies (California Code of Regulations 14(3), § 15002(i)). Under CEQA, "A project with an effect that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment" (Cal. Code Regs. Tit. 14(3), § 15064.5(b)). State CEQA Guidelines section 15064.5(a) defines a "historical resource" as a resource that meets one or more of the following criteria:

- Listed in, or eligible for listing in, the California Register of Historical Resources (California Register)
- Listed in a local register of historical resources (as defined at Cal. Public Res. Code § 5020.1(k))
- Identified as significant in a historical resource survey meeting the requirements of § 5024.1(g) of the Cal. Public Res. Code
- Determined to be a historical resource by a project's lead agency (Cal. Code Regs. Tit. 14(3), § 15064.5(a))

A historical resource consists of "Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California…Generally, a resource shall be considered by the lead agency to be 'historically significant' if the resource meets the criteria for listing in the California Register of Historical Resources" (Cal. Code Regs. Tit. 14(3), § 15064.5(a)(3)).

The significance of a historical resource is impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for the California Register. If an impact on a historical or archaeological resource is significant, CEQA requires feasible measures to minimize the impact (State CEQA Guidelines § 15126.4 (a)(1)). Mitigation of significant impacts must lessen or eliminate the physical impact that the project will have on the resource.

Section 5024.1 of the Cal. Public Res. Code established the California Register. Generally, a resource is considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the California Register (Cal. Code Regs. tit. 14(3), § 15064.5(a)(3)). The eligibility criteria for the California Register are similar to those of the



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Project Location Site
Craig Apartments Project

Figure 1

Reference: ESRI; USGS Quad: La Habra (1981), California

Kimley-Horn

National Register of Historic Places (National Register), and a resource that meets one or more of the eligibility criteria of the National Register will be eligible for the California Register.

The California Register program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance, identifies historical resources for state and local planning purposes, determines eligibility for state historic preservation grant funding and affords certain protections under CEQA. Criteria for Designation:

1. Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
2. Associated with the lives of persons important to local, California or national history.
3. Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values.
4. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

In addition to meeting one or more of the above criteria, the California Register requires that sufficient time has passed since a resource's period of significance to "obtain a scholarly perspective on the events or individuals associated with the resources." (CCR 4852 [d][2]). Fifty years is normally considered sufficient time for a potential historical resource, and in order that the evaluation remain valid for a minimum of five years after the date of this report, all resources older than 45 years (i.e. resources from the "historic-period") will be evaluated for California Register listing eligibility, or CEQA significance. The California Register also requires that a resource possess integrity. This is defined as the ability for the resource to convey its significance through seven aspects: location, setting, design, materials, workmanship, feeling, and association.

Finally, CEQA requires that significant effects on unique archaeological resources be considered and addressed. CEQA defines a unique archaeological resource as any archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.
2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

CEQA Guidelines Section 15064.5 Appendix G includes significance criteria relative to archaeological and historical resources. These have been utilized as thresholds of significance here, and a project would have a significant environmental impact if it would:

a) cause a substantial adverse change in the significance of a historical resource as defined in section 10564.5;

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 10564.5;

c) Disturb any human remains, including those interred outside of formal cemeteries.

Tribal Cultural Resources. The Legislature added requirements regarding tribal cultural resources for CEQA in Assembly Bill 52 (AB 52) that took effect July 1, 2015. AB 52 requires consultation with California Native American tribes and consideration of tribal cultural resources in the CEQA process. By including tribal cultural resources early in the CEQA process, the legislature intended to ensure that local and Tribal governments, public agencies, and project proponents would have information available, early in the project planning process, to identify and address potential adverse impacts to tribal cultural resources. By taking this proactive approach, the legislature also intended to reduce the potential for delay and conflicts in the environmental review process. To help determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a Proposed Project. Since the City will initiate and carry out the required AB52 Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff are available to answer questions and address comments as necessary.

Paleontological Resources. CEQA provides guidance relative to significant impacts on paleontological resources, indicating that a project will have a significant impact on paleontological resources if it disturbs or destroys a unique paleontological resource or site or unique geologic feature. Section 5097.5 of the California Public Resources Code specifies that any unauthorized removal of paleontological remains is a misdemeanor. Further, California Penal Code Section 622.5 sets penalties for damage or removal of paleontological resources. CEQA documentation prepared for projects would be required to analyze paleontological resources as a condition of the CEQA process to disclose potential impacts. Please note that as of January 2018 paleontological resources are considered in the geological rather than cultural category. Therefore, paleontological resources are not summarized in the body of this report. A overview has been completed for the project by qualified paleontologists from the Western Science Center and is provided as Appendix D.

NATURAL SETTING

The project site is located in the southwestern flank of the small peninsular range known as the West Coyote Hills. Local sediments are dominated by sedimentary deposits of the Upper Cretaceous, Tertiary, and Quaternary periods, obscured beneath an intermittent veneer of recent alluvium (Oates 1960, Stadum 1982). Local rainfall ranges from 5 to 15 inches annually (Jaeger and Smith 1971: 36-37). Chaparral, coastal sage scrub, and riparian

vegetation communities dominate regional flora. Key native plants include black sage, California brittlebush, California buckwheat, California sagebrush, deerweed, golden yarrow, laurel sumac, lemonadeberry, poison oak, purple sage, sticky monkeyflower, sugar bush, toyon, white sage, coastal century plant, coastal cholla, prickly-pear cactus, arroyo willow, and bulrush. These plants were utilized by local animal species, which included kangaroo rats, California horned lizard, orange-throated whiptail, San Diego horned lizard, brown-headed cowbird, California gnatcatcher, California quail, cactus wren, darkling beetle, harvester ant, and Palos Verdes blue butterfly (Williams et al. 2008:117,122). Peripheral species included deer, and various rodents, rabbits, and birds -many of which were utilized by prehistoric and historic inhabitants (Lightfoot and Parrish 2009).

CULTURAL SETTING

Prehistory

Various regional syntheses have been commonly utilized in the archaeological literature for southern California. The most widely cited include Wallace (1955) and Warren (1968 and 1986). Wallace defines four cultural horizons, each with characteristic local variations:

- Early Period (before 6000 B.C.)
- Milling Stone (6000 to 3000 B.C.)
- Intermediate (3000 B.C. to A.D. 500)
- Late Prehistoric (A.D. 500 to A.D. 1769).

Employing a more ecological model Warren (1968) defined three traditions, including:

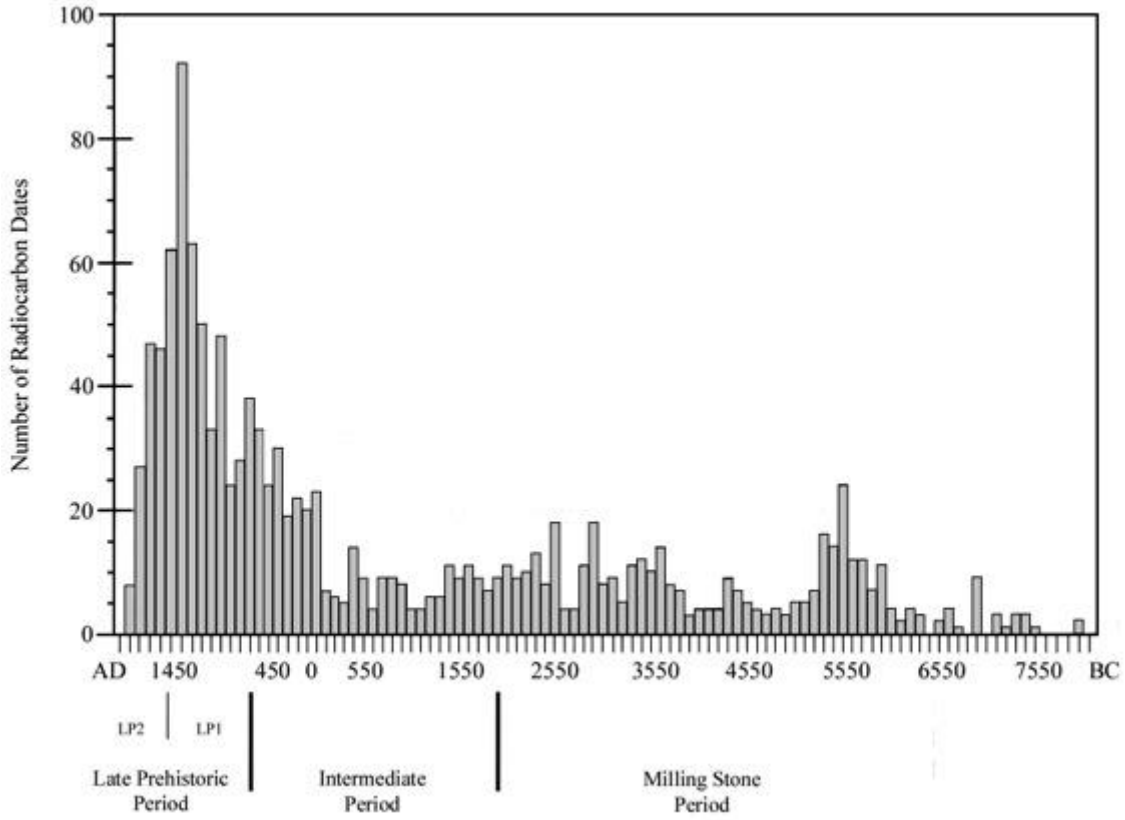
- San Dieguito (pre 5500 B.C.)
- Encinitas (5500 B.C. to A.D. 600)
- Shoshonean (A.D. 600 to A.D. 1769).

Relying on data from more desert-based groups Warren defined five periods in his 1986 study:

- Lake Mojave (8000 to 5000 B.C.)
- Pinto (5000 to 2000 B.C.
- Gypsum (2000 B.C. to A.D. 500)
- Saratoga Springs (A.D. 500 to 1200)
- Protohistoric (A.D. 1200 to 1769).

Although these references have provided useful overviews for southern California, updated studies more specific to the prehistory of coastal southern California (see Arnold 1990, 1991, 1992, 1995; Arnold et al. 1997; Raab and Larson 1997) are relevant to the current project area. The current study is synthesized from Mason et al. (1997), and Koerper et al. (2002). This regional focus is considered vital to Orange County prehistory because of the wealth of reliably dated prehistoric sites recorded in area, ranging from 7550 B.C. to the late Late Prehistoric (Mason et al. 1997:35; Koerper et al. 2002:68). A temporal scheme has been formulated from data utilized by both studies, and is provided below in Table A.

Table A. Radiocarbon Dates/Periods from Sites in Orange County (Koerper et al. 2002:68)



Mason et al. (1997) combine data from six sites excavated during the Newport Coast Archaeological Project (NCAP) with climatic and biogeographical information collected within the greater Orange County area to address the importance of:

- terrestrial/marine vertebrates versus shell-fish/plant utilization by Millingstone populations
- significant population fluctuations during the Early to Middle Holocene
- settlement transition and other adaptive strategies at the end of the Middle Holocene
- issues of prehistoric lithic trade.

They conclude that Middle Holocene site expansion along the Orange County coast is the result of new habitats containing important prehistoric food sources that flourished due to stabilizing sea levels between five and six thousand years ago (Mason et al. 1997:58). These habitats particularly included kelp beds containing sheephead fish, and sandy and muddy substrates that encouraged proliferation of cockles, scallops, oysters, bat rays, and guitar fish -each of which has been found in significant numbers during this era at various sites within NCAP (Mason et al. 1997:40-41). During the late Holocene population increase resulting from access to these food sources as well as terrestrial resources allowed further expansion into Orange County's interior.

As prehistoric populations spread throughout the Orange County area, their tool types and site remains indicate two settlement strategies. The first, known as the forager model, enabled whole groups to mobilize between residential bases as part of a seasonal round. This was commonly practiced during the Millingstone and early Intermediate Period. During the late Intermediate Period and the early Late Prehistoric Period, a functional hierarchy of site types appear, containing multi-season residential bases, minor residential bases, and single gender specialized activity locations. This indicates the second model, known as the collector (or village) model, in which residential bases remain the same or seasonal, while specialized procurement parties are deployed to collect resources and bring them back to base (Mason et al. 1997:52, 56; see also Binford 1980, and Thomas 1983).

In addition to site data, Koerper et al. (2002) utilize information from wetland salinity, climatic and hydrologic conditions, and artificial and natural resource depletion studies which link "demographic dynamics to subsistence intensification, territoriality, violent behavior, trade, and the further elaboration of status hierarchies during the late Holocene in Orange County" (Koerper et al. 2002:63). This approach has underscored the importance of punctuated environmental events, such as the capricious coursing of local drainage systems often catalyzed by the commencement and/or termination of droughts (i.e. the Medieval Climatic Anomaly and the Little Ice Age). Having occurred within relatively short time frames, these events are posited to give rise to a model of dramatic cultural shift rather than one of gradualism, and have been confirmed by correlating radiocarbon dates utilized in the local prehistoric chronology (Table A).

Dramatic shift is particularly evident between ca. 2000 and 1000 B.C. when a decline in carbon-fourteen dates from the area indicated the disappearance of a population practicing a residential mobility pattern of foraging, the predominant adaptive strategy practiced during the mid-Holocene. The disappearance of this group is highly correlated with very dry conditions, as indicated by pollen studies (Koerper et al. 2002:79), and people do not reappear in this area in significant numbers until circa 1000 B.C., at which point fewer, more highly concentrated settlements appear. Some resource intensification is apparent during the ensuing generations, and by the beginning of the Late Prehistoric is confirmed by the expanding use of shellfish recovered in context as far as six kilometers from its origin at Newport Bay. Resource intensification is often a sign of a shortage of preferred or customary resources brought about by a rise in population and/or other factors. Such a rise in population certainly occurred by A.D. 600, peaking circa A.D. 1300 (see Table A), and is correlated with the local advent of the bow and arrow, which may have been brought by Takic speakers from the Southwest (Koerper et al. 2002:80). Native Orange County populations began to decline during the late Late Prehistoric prior to any likely effects of European disease. Koerper et al. suggests that rather than exceeding the land's carrying capacity, this decline in the Orange County area was due to a failure of "food yields...to increase in proportion to the additional investments of energy expended in subsistence labor" (Koerper et al. 2002:80; see also Halstead and O'Shea 1989; Hayden 1990). This has been further supported by oral tradition, which suggests that people were driven to leave food procurement areas due to incongruities between population and resources (ibid), which gave rise to the patterns whose rudiments remained at the time of European contact.

Ethnography

The project site is situated within the traditional boundaries of the Juaneño (Ajachemem; see Boscana 1933, Bean and Shipek 1978, and Kroeber 1925). The term Juaneño derives from Mission San Juan Capistrano and refers to Takic speakers associated with that mission. Although early studies separated the Juaneño and Luiseño based on linguistic differences (White 1963:91), more recent work has purported that the two groups actually represent a single ethnic nationality (Bean and Shipek 1978:550). The Juaneño were originally studied using ethnography, particularly during the early 20th century, although their decimation through acculturation and disease has necessitated supplementing any social analysis with archaeological data (see Prehistory above). The Juaneño were semi-nomadic hunter-gatherers who subsisted by exploitation of seasonably available plant and animal resources. Plants utilized for food were heavily relied upon and included acorn-producing oaks, as well as seed-producing grasses and sage. Animal protein was commonly derived from rabbits and deer in inland regions, while coastal populations supplemented their diets with fish, shellfish, and marine mammals (Boscana 1933, Heizer 1968, Bean and Shipek 1978).

History

In Southern California, the historic era is generally divided into three periods: the Spanish or Mission Period (1769 to 1821), the Mexican or Rancho Period (1821 to 1848), and the American Period (1848 to present).

Spanish Period. The first European to pass through the area is thought to be a Spaniard called Father Francisco Garces. Having become familiar with the area, Garces acted as a guide to Juan Bautista de Anza, who had been commissioned to lead a group across the desert from a Spanish outpost in Arizona to set up quarters at the Mission San Gabriel in 1771 near what today is Pasadena (Beck and Haase 1974). Garces was followed by Alta California Governor Pedro Fages, who briefly explored the region in 1772 (Beck and Haase 1974).

Mexican Period. In 1821, Mexico overthrew Spanish rule and the missions began to decline. By 1833, the Mexican government passed the Secularization Act, and the missions, reorganized as parish churches, lost their vast land holdings, and released their neophytes (Beattie and Beattie 1974).

American Period. The American Period, 1848–Present, began with the Treaty of Guadalupe Hidalgo. In 1850, California was accepted into the Union of the United States primarily due to the population increase created by the Gold Rush of 1849. The cattle industry reached its greatest prosperity during the first years of the American Period. Mexican Period land grants had created large pastoral estates in California, and demand for beef during the Gold Rush led to a cattle boom that lasted from 1849–1855. However, beginning about 1855, the demand for beef began to decline due to imports of sheep from New Mexico and cattle from the Mississippi and Missouri Valleys. When the beef market collapsed, many California ranchers lost their ranchos through foreclosure. A series of disastrous floods in 1861–1862, followed by a significant drought further diminished the economic impact of local ranching. This decline combined with ubiquitous agricultural and real estate developments of the late 19th century, set the stage for diversified economic pursuits that have continued to proliferate to this day (Beattie and Beattie 1974; Cleland 1941).

PERSONNEL

David Brunzell, M.A., RPA acted as the Project Manager and Principal Investigator for the current study. Mr. Brunzell conducted the cultural resources records search at the South Central Coastal Information Center (SCCIC) located at California State University, Fullerton. BCR Consulting Staff Archaeologists Kainoa Heskett and Fabian Reyes-Martinez completed the pedestrian field survey.

METHODS

Records Search

Prior to fieldwork, BCR Consulting completed an archaeological records search at the SCCIC on October 3, 2022. This included a review of all recorded historic and prehistoric cultural resources, as well as a review of known cultural resources, and survey and excavation reports generated from projects completed within one mile of the project site. In addition, a review was conducted of the National Register of Historic Places (National Register), the California Register of Historical Resources (California Register), and documents and inventories from the California Office of Historic Preservation including the lists of California Historical Landmarks, California Points of Historical Interest, Listing of National Register Properties, and the Inventory of Historic Structures.

Field Survey

An archaeological pedestrian field survey of the project site was conducted on September 16, 2022. The survey was conducted by walking parallel transects spaced approximately 15 meters apart across 100 percent of the accessible project site. Soil exposures, were carefully inspected for evidence of cultural resources.

RESULTS

Records Search

Data from the SCCIC revealed that six cultural resource studies have taken place resulting in the recording of three cultural resources within a one half-mile radius of the project site. The project site has never been subject to previous cultural resources assessment and no cultural resources have been previously recorded within its boundaries. The records search results are summarized in Table B, and a complete records search bibliography is provided in Appendix A.

Table B. Cultural Resources and Reports Located Within One Half-Mile of the Project Site

USGS 7.5 Minute Quad	Cultural Resources Within 0.50 Mile of Project Site	Studies W/in 0.50 Mile of Project
La Habra, California (1981)	P-19-188804: Historic-Period Building (1/4 Mile NE) P-30-176663: Historic-Period Railroad (1/4 Mile E) P-30-120020: Historic-Period Refuse Scatter (1/4 Mile N)	OR-424, 2793, 2802, 2806, 3298, 4246

Additional Research. A review of aerial photos show that the now-vacant project site was occupied by historic-period residences prior to 1953 (United States Department of Agriculture 1953).

Field Survey

During the field survey, BCR Consulting carefully inspected the project site, and identified no cultural resources (including historic-period or prehistoric archaeological sites, or historic-period buildings) within its boundaries. Surface visibility was approximately 70 percent and sediments were dominated by silty sands. Vegetation included seasonal grasses, one fan palm, and two unidentified trees. The project site has been subject to extensive disturbances associated with the construction and subsequent demolition and removal of former residences (see Additional Research, above). The site has been subject to modern dumping, and one modern shed has been identified along the western boundary.

RECOMMENDATIONS

The records search and field survey did not identify any cultural resources (including prehistoric or historic archaeological sites or historic-period buildings) within the project site. Furthermore, research results combined with surface conditions have failed to indicate sensitivity for buried cultural resources. Therefore, no significant impacts related to archaeological or historical resources is anticipated and no further investigations are recommended for the three project sites unless:

- the proposed project is changed to include areas not subject to this study;
- the proposed project is changed to include the construction of additional facilities;
- cultural materials are encountered during project activities.

Although the current study has not indicated sensitivity for cultural resources within any of the three the project site boundaries, ground disturbing activities always have the potential to reveal buried deposits not observed on the surface during previous surveys. Prior to the initiation of ground-disturbing activities, field personnel should be alerted to the possibility of buried prehistoric or historic cultural deposits. In the event that field personnel encounter buried cultural materials, work in the immediate vicinity of the find should cease and a qualified archaeologist should be retained to assess the significance of the find. The qualified archaeologist shall have the authority to stop or divert construction excavation as necessary. If the qualified archaeologist finds that any cultural resources present meet eligibility requirements for listing on the California Register or the National Register, plans for the treatment, evaluation, and mitigation of impacts to the find will need to be developed. Prehistoric or historic cultural materials that may be encountered during ground-disturbing activities include:

- historic artifacts such as glass bottles and fragments, cans, nails, ceramic and pottery fragments, and other metal objects;
- historic structural or building foundations, walkways, cisterns, pipes, privies, and other structural elements;
- prehistoric flaked-stone artifacts and debitage (waste material), consisting of obsidian, basalt, and or cryptocrystalline silicates;
- groundstone artifacts, including mortars, pestles, and grinding slabs;
- dark, greasy soil that may be associated with charcoal, ash, bone, shell, flaked stone, groundstone, and fire affected rocks.

Results are pending for the Sacred Lands File search with the NAHC. The State Legislature added requirements regarding tribal cultural resources for CEQA in Assembly Bill 52 (AB 52) that took effect July 1, 2015. AB 52 requires consultation with California Native American tribes and consideration of tribal cultural resources in the CEQA process. By including tribal cultural resources early in the CEQA process, the legislature intended to ensure that local and Tribal governments, public agencies, and project proponents would have information available, early in the project planning process, to identify and address potential adverse impacts to tribal cultural resources. By taking this proactive approach, the legislature also intended to reduce the potential for delay and conflicts in the environmental review process. To help determine whether a project may have such an effect, the Public Resources Code requires a lead agency to consult with any California Native American tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a Proposed Project. Since the City will initiate and carry out the required AB52 Native American Consultation, the results of the consultation are not provided in this report. However, this report may be used during the consultation process, and BCR Consulting staff is available to answer questions and address concerns as necessary.

According to CEQA Guidelines, projects subject to CEQA must determine whether the project would "directly or indirectly destroy a unique paleontological resource". The Paleontological Overview provided in Appendix C has recommended that:

> The geologic units underlying this project are mapped entirely as alluvial silt, sand and gravel deposits dating from the Holocene period (Dibblee, 2001). Holocene alluvial units are considered to be of high preservation value, but material found is unlikely to be fossil material due to the relatively modern associated dates of the deposits. However, if development requires any substantial depth of disturbance, the likelihood of reaching Pleistocene alluvial sediments would increase. The Western Science Center does not have localities within the project area or within a 1 mile radius.
>
> While the presence of any fossil material is unlikely, if excavation activity disturbs deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods, the material would be scientifically significant. Excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

If human remains are encountered during the undertaking, State Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the remains are determined to be prehistoric, the Coroner will notify the Native American Heritage Commission (NAHC), which will determine and notify a Most Likely Descendant (MLD). With the permission of the landowner or his/her authorized representative, the MLD may inspect the site of the discovery. The MLD shall complete the inspection within 48 hours of notification by the NAHC.

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APPENDIX A

RECORDS SEARCH BIBLIOGRAPHY

Report List

KIM2220

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
OR-00424	Paleo -	1979	Desautels, Roger J.	Cultural Resources Report on an Archaeological, Historical and Paleontological Records Search and Survey of Approximately 3 Acres of Property Located in Buena Park, California	Scientific Resource Surveys, Inc.	
OR-02793		2001	Bonner, Wayne H.	Records Search Results for Sprint PCS Facility OG54XC458A (Gordon Square Shopping Center), 5301 Beach Blvd., Buena Park, Orange County, California	Michael Brandman Associates	
OR-02802		1996	Strudwick, Ivan H.	Cultural Resources Survey for the 70 Acre Lakeside Residential Development South of West Coyote Hills, Buena Park, Orange County, California	LSA Associates, Inc.	
OR-02806		2002	Duke, Curt	Cultural Resource Assessment at & T Wireless Services Facility No. 13018a Orange County, California	LSA Associates, Inc.	
OR-03298		2003	Tang, Bai "Tom" and Teresa Woodard	(see LA7871) Historical Resource Evaluation Report Third Main Track and Grade Seperation Project Hobart (mp 148.9) to Basta (mp 163.3), Bnsf/metrolink East-west Main Line Railroad Track, Vernon to Fullerton, Los Angeles and Orange Counties, California	CRM Tech	
OR-04246		2000	McKenna, Jeanette	A Phase I Cultural Resources Investigation of the Buena Park Transportation Facility and Residential Community Located in the City of Buena Park, Orange County, CA	McKenna et al.	

Resource List

KIM2220

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-188804		Other - Arbor Vitae Interchange	Building	Historic	HP02	1999 (Paula Boghosian, Caltrans)	LA-06233, LA-11699
P-30-120020		Resource Name - Northam Privies	Site	Historic	AH04	1998 (SCCIC)	
P-30-176663		OHP Property Number - 144278; Resource Name - Atchison, Topeka & Santa Fe RR, Burlington Northern Santa Fe RR; Other - Burlington Northern Santa Fe; Other - Metrolink Railroad; Voided - 30-176664; Other - CRM TECH 789-50H & 951-1H; Other - California Southern Railroad; Voided - 30-176700	Structure	Historic	HP37; HP39	2002 (D. Ballester, CRM Tech); 2002 (Bai Tang and Josh Smallwood, CRM Tech); 2003 (Richard Shepard, BonTerra); 2007 (S. McCormick); 2012 (MK Meiser, AECOM); 2016; 2016 (B. Tang, CRM Tech); 2018	LA-07871, LA-08158, OR-03383, OR-03517, OR-03519, OR-03551, OR-03555, OR-03573, OR-03747, OR-03797, OR-03822, OR-03835, OR-03864, OR-03866, OR-03905, OR-03910, OR-03916, OR-03919, OR-03929, OR-03942, OR-03983, OR-04020, OR-04045, OR-04058, OR-04074, OR-04096, OR-04131, OR-04154, OR-04156, OR-04169, OR-04182, OR-04186, OR-04217, OR-04229, OR-04257, OR-04290, OR-04292, OR-04331, OR-04367, OR-04374, OR-04385, OR-04404, OR-04457

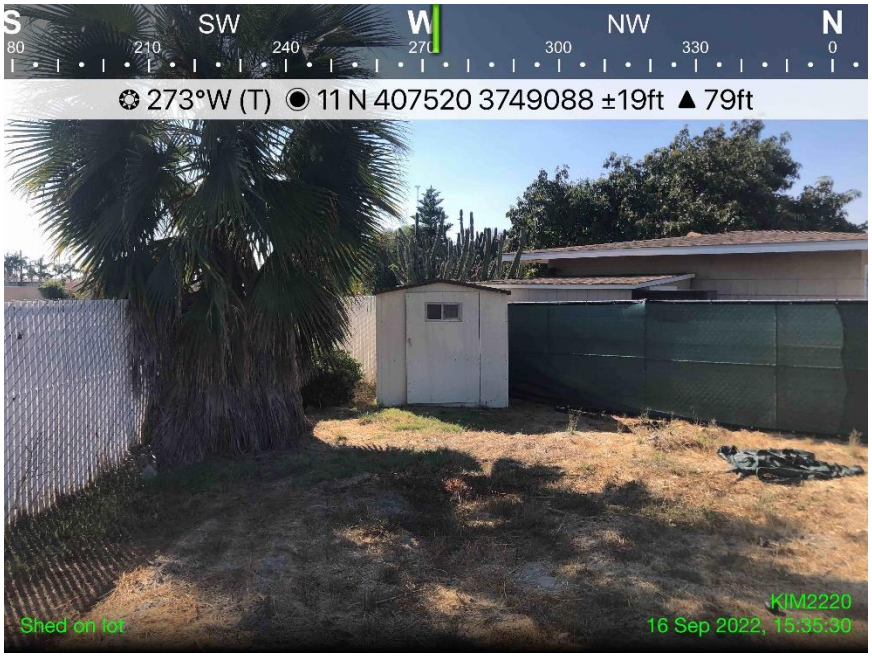
APPENDIX B

PROJECT PHOTOGRAPHS


N
NE
E
SE
0
30
60
90
120
150
72°E (T) 11 N 407542 3749089 ±26ft ▲79ft
Overview
16 Sep 2022, 15:34:31


N
NE
E
SE
0
30
60
90
120
150
78°E (T) 11 N 407555 3749111 ±19ft ▲78ft
Gravel
16 Sep 2022, 15:43:45


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300
330
0
284°W (T) 11 N 407606 3749095 ±45ft 80ft
Overview
KIM2220
16 Sep 2022, 15:48:01


S
SW
W
NW
N
80
210
240
270
300
330
0
273°W (T) 11 N 407520 3749088 ±19ft 79ft
Shed on lot
KIM2220
16 Sep 2022, 15:35:30

APPENDIX C

NATIVE AMERICAN HERITAGE COMMISSION SACRED LANDS FILE SEARCH

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
Reginald Pagaling
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SECRETARY
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COMMISSIONER
Wayne Nelson
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October 31, 2022

David Brunzell
BCR Consulting, LLC

Via Email to: bcrllc2008@gmail.com

Re: Native American Consultation, Pursuant to Senate Bill 18 (SB18), Government Codes §65352.3 and §65352.4, as well as Assembly Bill 52 (AB52), Public Resources Codes §21080.1, §21080.3.1 and §21080.3.2, Craig Apartments (KIM2221) Project, Orange County

Dear Mr. Brunzell:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties or projects.

Government Codes §65352.3 and §65352.4 require local governments to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to cultural places when creating or amending General Plans, Specific Plans and Community Plans.

Public Resources Codes §21080.3.1 and §21080.3.2 requires public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose of avoiding, protecting, and/or mitigating impacts to tribal cultural resources as defined, for California Environmental Quality Act (CEQA) projects.

The law does not preclude local governments and agencies from initiating consultation with the tribes that are culturally and traditionally affiliated within your jurisdiction. The NAHC believes that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

Best practice for the AB52 process and in accordance with Public Resources Code §21080.3.1(d), is to do the following:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section.

The NAHC also recommends, but does not require that lead agencies include in their notification letters, information regarding any cultural resources assessment that has been completed on the area of potential affect (APE), such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

    - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
    - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
    - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
    - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.

2. The results of any archaeological inventory survey that was conducted, including:

    - Any report that may contain site forms, site significance, and suggested mitigation measures.

      All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The result of the Sacred Lands File (SLF) check conducted through the Native American Heritage Commission was negative.

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand well help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Tribal Consultation List
Orange County
10/31/2022

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This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed Craig Apartments (KIM2221) Project, Orange County.

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10/31/2022

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APPENDIX D

PALEONTOLOGICAL OVERVIEW

WESTERN SCIENCE CENTER

October 13, 2022

BCR Consulting LLC
Scott Randell
505 West 8th Street
Claremont, CA 91711

Dear Mr. Randell,

This letter presents the results of a record search conducted for the Craig Apartments Project in the city of Buena Park, Orange County, California. The project site is located south of Craig Avenue, west of Beach Boulevard, and north of Franklin Street in a non-sectioned portion of Township 3 South, and Range 11 West on the *La Habra, California* USGS 7.5 minute quadrangle.

The geologic units underlying this project are mapped entirely as alluvial silt, sand and gravel deposits dating from the Holocene period (Dibblee, 2001). Holocene alluvial units are considered to be of high preservation value, but material found is unlikely to be fossil material due to the relatively modern associated dates of the deposits. However, if development requires any substantial depth of disturbance, the likelihood of reaching Pleistocene alluvial sediments would increase. The Western Science Center does not have localities within the project area or within a 1 mile radius.

While the presence of any fossil material is unlikely, if excavation activity disturbs deeper sediment dating to the earliest parts of the Holocene or Late Pleistocene periods, the material would be scientifically significant. Excavation activity associated with the development of the project area is unlikely to be paleontologically sensitive, but caution during development should be observed.

If you have any questions, or would like further information, please feel free to contact me at dradford@westerncentermuseum.org

Sincerely,



Darla Radford
Collections Manager

Craig Apartments Project

Project area, one mile radius, geologic mapping, and any WSC fossil localities.

Legend

- Qa: Alluvial gravel, sand and silt (Holocene)
- Craig Apartments Project Area

Appendix D

Energy Assessment

Kimley»Horn

MEMORANDUM

To: Ruben Salas, Kimley-Horn and Associates, Inc.

From: Elena Ajdari, Kimley-Horn and Associates

Date: December 16, 2022

Subject: Craig Apartments Development – Energy Assessment

Purpose

The purpose of this technical memorandum is to evaluate potential short- and long-term energy consumption impacts of the proposed Craig Apartments Development Project (project). The purpose of this Energy Technical Memo is to evaluate the potential construction and operational energy consumption associated with the project and determine the level of impact the project would have on the environment.

Project Location

The project site is a vacant 0.69-acre lot located at 7682, 7692, 7712, and 7722 Craig Avenue, in the City of Buena Park, Orange County, California, Assessor Parcel Numbers (APNs) 066-132-09, -15, -16, and 17. The project site has been heavily disturbed, and no native habitat nor ornamental habitat occurs onsite. The project site is surrounded by single family residential dwelling units to the north and west, with Craig Avenue directly adjacent to the north, commercial uses to the east and southeast, and the Brea Creek to the south. The site is relatively flat.

Project Description

The proposed project involves the construction of 12 three-story townhouse-style apartments. The apartments would be divided between two buildings, each containing 6 apartments. The two buildings would be built in tandem with one building facing Craig Avenue and the second building behind building one. The project would total approximately 23,655-square-feet (SF) of building space and would include drive-in vehicle garages at ground level and two above ground floors of living space. The project would include perimeter landscaping and green space buffering the project from the single-family residential dwelling unit (DU) to the west. The project would include pedestrian walkways, visitor parking, and perimeter/security lighting. See Exhibit 1: Conceptual Site Plan for more details. The project site has an existing (Low Density Residential) General Plan land use designation and a Single Family Residential (RS-6) zoning district and requires a General Plan Amendment (GPA) and a Zone Change (ZC) to Medium Density Residential (RM-20).

Site Access

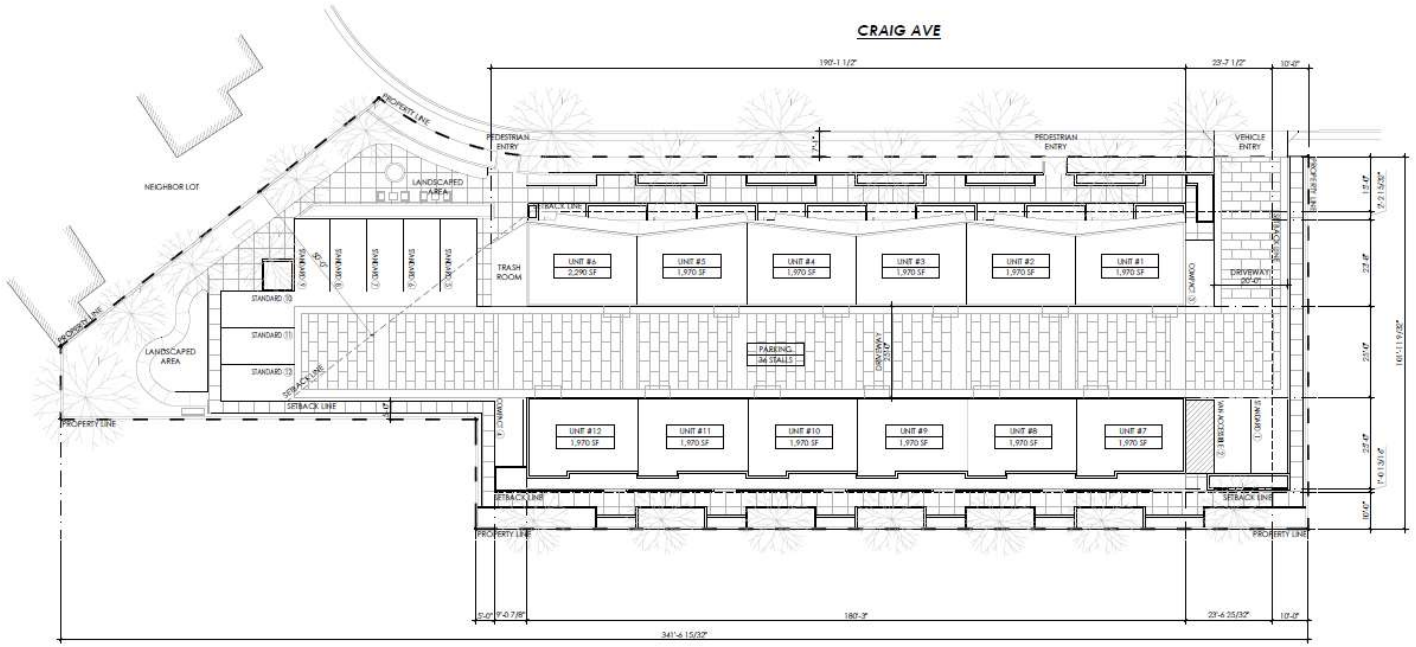
Regional access is provided on Interstate 5 (I-5) via the Beach Boulevard ramps. Local access is provided via Beach Boulevard (Highway 39) and Craig Avenue. Main project site vehicular access would be provided via one twenty-foot-wide paved driveway located on the northeast corner of the site on Craig Avenue.

Parking

The project would provide thirty-six automobile parking spaces. Twenty-four of the parking spaces would be indoor (garage) parking spaces and twelve would be outdoor (visitor) parking spaces. Outdoor parking spaces would be mainly consolidated along the western side of the site with the balance of the outdoor parking spaces throughout the site.

Kimley»Horn

Exhibit 1: Conceptual Site Plan



Kimley»Horn

Energy Conservation

In 1975, largely in response to the oil crisis of the 1970s, the California State Legislature adopted Assembly Bill 1575 (AB 1575), which created the California Energy Commission (CEC). The statutory mission of the CEC is to forecast future energy needs, license thermal power plants of 50 megawatts or larger, develop energy technologies and renewable energy resources, plan for and direct state responses to energy emergencies, and, perhaps most importantly, promote energy efficiency through the adoption and enforcement of appliance and building energy efficiency standards. AB 1575 also amended Public Resources Code Section 21100(b)(3) to require Environmental Impact Reports (EIRs) to consider the wasteful, inefficient, and unnecessary consumption of energy caused by a project. Thereafter, the State Resources Agency created Appendix F, *Energy Conservation*, in the California Environmental Quality Act Guidelines (CEQA Guidelines). CEQA Guidelines Appendix F is an advisory document that assists EIR preparers in determining whether a project will result in the inefficient, wasteful, and unnecessary consumption of energy.

In addition, the California Natural Resources Agency finalized updates to the CEQA Guidelines in December 2018. New CEQA Guidelines Section 15126.2(b) treats "wasteful, inefficient, or unnecessary" energy consumption as a significant environmental impact. As a result, energy thresholds have been incorporated into Appendix G of the CEQA Guidelines. This technical memorandum has been prepared to assess energy impacts in accordance with Appendix G of the CEQA Guidelines.

Environmental Setting

Energy consumption is analyzed in this technical memorandum due to the potential direct and indirect environmental impacts associated with the project. Such impacts include the depletion of nonrenewable resources and emissions of pollutants during both construction and long-term operational phases.

<u>Electricity Services</u>

Southern California Edison (SCE) provides electrical services to the City of Buena Park (City) through State-regulated public utility contracts. Over the past 15 years, electricity generation in California has undergone a transition. Historically, California has relied heavily on oil- and gas-fired plants to generate electricity. Spurred by regulatory measures and tax incentives, California's electrical system has become more reliant on renewable energy sources; including cogeneration, wind energy, solar energy, geothermal energy, biomass conversion, transformation plants, and small hydroelectric plants. Unlike petroleum production, electricity generation is not usually tied to the location of the fuel source and can be delivered great distances via the electrical grid. The generating capacity of a unit of electricity is expressed in megawatts (MW). Net generation refers to the gross amount of energy produced by a unit, minus the amount of energy the unit consumes. Generation is typically measured in megawatt-hours (MWh), kilowatt-hours (kWh), or gigawatt-hours (GWh).

Natural Gas Services

Southern California Gas Company (SoCalGas) provides natural gas services to the City of Buena Park and Orange County (County). Natural gas is a hydrocarbon fuel found in reservoirs beneath the Earth's surface and is composed primarily of methane (CH_4). It is used for space and water heating, process heating and electricity generation, and as transportation fuel. Use of natural gas to generate electricity is expected to increase in coming years because it is a relatively clean alternative to other fossil fuels (e.g., oil and coal). In California and throughout the western United States, many new electrical generation plants fired by natural gas are being brought online. Thus, there is great interest in importing liquefied natural gas from other parts of the world. California's natural gas-fired electric generation increased by 9.5 percent in 2021, accounting for 50.2 percent of in-state generation.[1]

The City's ongoing development review process includes a review and comment opportunity for privately owned utility companies and to provide input on all development proposals. The input facilitates a detailed review of projects by service purveyors to assess the potential demands for utility services on a project-by-project basis. The ability of utility providers to provide services concurrently with each project is evaluated during the development review process. Utility companies are bound by contract to update energy systems to meet any additional demand.

Energy Usage

Energy usage is typically quantified using the British Thermal Unit (BTU). Total energy usage in California was 6,922.8 trillion BTUs in 2020 (the most recent year for which this specific data is available).[2] Of California's total energy usage, the breakdown by sector is 34.0 percent transportation, 24.6 percent industrial, 19.6 percent commercial, and 21.8 percent residential.[3] Electricity and natural gas in California are generally consumed by stationary users such as residences, commercial, and industrial facilities, whereas petroleum consumption is generally accounted for by transportation-related energy use. In 2022, taxable gasoline sales (including aviation gasoline) in California accounted for 13,919,678,835 gallons of gasoline.[4]

The electricity consumption attributable to the County from 2011 to 2021 is shown in Table 1: Electricity Consumption in Orange County 2011-2021. As indicated in Table 1, energy consumption in the County fluctuated from 2011 and 2014 and decreased steadily between 2015 and 2021.

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1 California Energy Commission, *2021 Total System Electric Generation*, https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2021-total-system-electric-generation, accessed December 2022.

2 U.S. Energy Information Administration, *Table F33: Total energy consumption, price, and expenditure estimates, 2020,* https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_fuel/html/fuel_te.html&sid=CA, accessed December 2022.

3 U.S. Energy Information Administration, *California State Profile and Energy Estimates*, *California Energy Consumption by End-Use Sector, 2020*, https://www.eia.gov/state/?sid=CA#tabs-2, accessed December 2022.

4 California Department of Tax and Fee Administration, *January 2022 – Motor Vehicle Fuel 10 Year Reports*, https://www.cdtfa.ca.gov/taxes-and-fees/spftrpts.htm, accessed December 2022.

Table 1: Electricity Consumption in Orange County 2011-2021	
Year	**Electricity Consumption (in millions of kilowatt hours)**
2011	19,925
2012	20,400
2013	20,280
2014	20,749
2015	20,739
2016	20,242
2017	20,204
2018	20,029
2019	19,857
2020	19,733
2021	18,932
Source: California Energy Commission, *Electricity Consumption by County*, http://www.ecdms.energy.ca.gov/, accessed December 2, 2022.	

The natural gas consumption attributable to the County from 2011 to 2021 is shown in Table 2: Natural Gas Consumption in Orange County 2011-2021. Natural gas consumption in the County relatively decreased between 2011 and 2015 with a slight increase in 2013 and increased between 2016 and 2019. The natural gas consumption has been decreased in 2020 and 2021.

Table 2: Natural Gas Consumption in Orange County 2011-2021	
Year	**Natural Gas Consumption (in millions of therms)**
2011	639
2012	613
2013	636
2014	545
2015	544
2016	570
2017	576
2018	575
2019	623
2020	595
2021	580
Source: California Energy Commission, *Natural Gas Consumption by County*, http://www.ecdms.energy.ca.gov/, accessed December 2, 2022.	

Automotive fuel consumption in the County from 2011 to 2021 is shown in Table 3: Automotive Fuel Consumption in Orange County 2011-2021. As shown in Table 3, on-road automotive fuel consumption in the County decreased in 2012, increased between 2013 and 2017, and fluctuated

from 2018 to 2021. Heavy-duty vehicle fuel consumption steadily increased between 2011 and 2017 with a slight decrease in 2012 and increased between 2018 and 2021.

Table 3: Automotive Fuel Consumption in Orange County 2011-2021

Year	On-Road Automotive Fuel Consumption (gallons)	Heavy-Duty Vehicle/Diesel Fuel Consumption (Construction Equipment) (gallons)
2011	1,119,502,123	108,392,454
2012	1,114,400,407	107,315,713
2013	1,117,555,370	113,057,847
2014	1,138,328,996	114,856,769
2015	1,165,317,948	117,232,528
2016	1,198,453,055	125,015,099
2017	1,200,683,279	128,632,254
2018	1,192,663,234	125,691,618
2019	1,214,386,012	126,227,616
2020	1,053,930,328	126,407,863
2021	1,191,375,139	131,231,200

Source: California Air Resources Board, EMFAC2021.

Regulatory Setting

The following is a description of Federal, State, and local environmental laws and policies related to energy consumption that are relevant to the proposed project.

State of California

California's Energy Efficiency Standards for Residential and Non-Residential Buildings (Title 24)

Energy conservation standards for new residential and nonresidential buildings were adopted by the California Energy Resources Conservation and Development Commission (now the California Energy Commission) in June 1977 and are updated every three years (Title 24, Part 6, of the California Code of Regulations). Title 24 requires the design of building shells and building components to conserve energy. The standards are updated periodically to allow for consideration and possible incorporation of new energy efficiency technologies and methods. On June 10, 2015, the CEC adopted the 2016 Building Energy Efficiency Standards, which went into effect on January 1, 2017. On May 9, 2018, the CEC adopted the 2019 Building Energy Efficiency Standards, which took effect on January 1, 2020.

The 2016 Standards improved upon the previous 2013 Standards for new construction of and additions and alterations to residential and nonresidential buildings. Under the 2016 Standards, residential buildings are 28 percent more energy efficient and nonresidential buildings are 5 percent more energy efficient than under the 2013 Standards. Buildings that are constructed in accordance with the 2013 Building Energy Efficiency Standards are 25 percent (residential) to 30 percent

(nonresidential) more energy efficient than the prior 2008 standards as a result of better windows, insulation, lighting, ventilation systems, and other features.

The 2019 Standards improve upon the 2016 Standards. Under the 2019 Title 24 standards, residential buildings are about 7 percent more energy efficient, and when the required rooftop solar is factored in for low-rise residential construction, residential buildings that meet 2019 Title 24 standards use about 53 percent less energy than those built to meet the 2016 standards.

On August 11, 2021, the CEC adopted the 2022 Energy Code. In December, it was approved by the California Building Standards Commission for inclusion into the California Building Standards Code. Among other updates like strengthened ventilation standards for gas cooking appliances, the 2022 Energy Code includes updated standards in three major areas:

- New electric heat pump requirements for residential uses, schools, offices, banks, libraries, retail, and grocery stores.

- The promotion of electric-ready requirements for new homes including the addition of circuitry for electric appliances, battery storage panels, and dedicated infrastructure to allow for the conversion from natural gas to electricity.

- The expansion of solar photovoltaic and battery storage standards to additional land uses including high-rise multifamily residences, hotels and motels, tenant spaces, offices, (including medical offices and clinics), retail and grocery stores, restaurants, schools, and civic uses (including theaters auditoriums, and convention centers).

The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11), commonly referred to as the CALGreen Code, is a statewide mandatory construction code that was developed and adopted by the California Building Standards Commission and the California Department of Housing and Community Development. CALGreen standards require new residential and commercial buildings to comply with mandatory measures under five topical areas: planning and design; energy efficiency; water efficiency and conservation; material conservation and resource efficiency; and environmental quality. CALGreen also provides voluntary measures (CALGreen Tier 1 and Tier 2) that local governments may adopt which encourage or require additional measures in the five green building topics. The most recent update to the CALGreen Code was adopted in 2019 and went into effect January 1, 2020. The CEC has approved the 2022 California Green Building Standards Code and it will take effect January 1, 2023. Projects whose permit applications are applied for on or after January 1, 2023, must comply with the 2022 Energy Code.[5]

[5] California Energy Commission. 2022. *2022 Building Energy Efficiency Standards*, https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2022-building-energy-efficiency (accessed December 2022).

California Public Utilities Commission Energy Efficiency Strategic Plan

The California Public Utilities Commission (CPUC) prepared an Energy Efficiency Strategic Plan in 2011 with the goal of promoting energy efficiency and a reduction in greenhouse gases. Assembly Bill 1109, adopted in 2007, also serves as a framework for lighting efficiency. This bill requires the State Energy Resources Conservation and Development Commission to adopt minimum energy efficiency standards as a means to reduce average Statewide electrical energy consumption by not less than 50 percent from the 2007 levels for indoor residential lighting and not less than 25 percent from the 2007 levels for indoor commercial and outdoor lighting by 2018. According to the Energy Efficiency Strategic Plan, lighting comprises approximately one-fourth of California's electricity use while non-residential sector exterior lighting (parking lot, area, walkway, and security lighting) usage comprises 1.4 percent of California's total electricity use, much of which occurs during limited occupancy periods.

Renewable Portfolio Standard

In 2002, California established its Renewable Portfolio Standard program with the goal of increasing the annual percentage of renewable energy in the state's electricity mix by the equivalent of at least 1 percent of sales, with an aggregate total of 20 percent by 2017. The California Public Utilities Commission subsequently accelerated that goal to 2010 for retail sellers of electricity (Public Utilities Code Section 399.15(b)(1)). Then-Governor Schwarzenegger signed Executive Order S-14-08 in 2008, increasing the target to 33 percent renewable energy by 2020. In September 2009, then-Governor Schwarzenegger continued California's commitment to the Renewable Portfolio Standard by signing Executive Order S-21-09, which directs the California Air Resources Board under its AB 32 authority to enact regulations to help the State meet its Renewable Portfolio Standard goal of 33 percent renewable energy by 2020. In September 2010, the California Air Resources Board adopted its Renewable Electricity Standard regulations, which require all of the State's load-serving entities to meet this target. In October 2015, then-Governor Brown signed into legislation Senate Bill 350, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030. Signed in 2018, SB 100 revised the goal of the program to achieve the 50 percent renewable resources target by December 31, 2026, and to achieve a 60 percent target by December 31, 2030. SB 100 also established a further goal to have an electric grid that is entirely powered by clean energy by 2045. Under the bill, the State cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

<u>City of Buena Park</u>

City of Buena Park General Plan

The City of Buena Park General Plan (Chapter 5) encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances,

systems and lighting; the use of renewable and clean sources of energy, generated on-site or offsite; and other innovative strategies. The General Plan establishes a series of energy efficiency related measures and contains the following provisions relative to the project:

Goal CS-7: Use of green techniques in new buildings, new building sites, and building remodels and retrofits.

Policy CS-7.1: Consider incentives such as expedited permitting process or reduced fees for new development or redevelopment projects that incorporate green building practices, Build it Green, and Leadership in Energy and Environmental Design (LEED) certified buildings.

Goal CS-8: Use of environmentally preferable products for new and existing developments.

Policy CS-8.1: Encourage green building efforts in single-family homes as well as in municipal, commercial, mixed-use, or multifamily residential projects.

Policy CS-8.2: Consider advertising and/or providing incentives for green building techniques in existing building retrofits as well as new buildings.

Goal CS-13: Reduction of per-capita nonrenewable energy usage and citywide peak electricity demand through energy efficiency and conservation.

Policy CS-13.4: Encourage new developments, redevelopments, and retrofit buildings to have solar energy panels, co-generation energy systems, and/or other energy efficient systems installed to reduce the unnecessary consumption of energy.

Policy CS-13.5: Encourage the installation of energy efficient appliances in new development and redevelopment projects.

Policy CS-13.9: Encourage the use of roof materials that reflect sun light rather than absorb sun light in order to reduce the need for using mechanical air conditioning systems.

Policy CS-13.10: Encourage the use of shading devices and awnings on window fronts in order to reduce the need for mechanical air conditioning systems.

CEQA Thresholds and Methodology

In accordance with CEQA Guidelines, the effects of a project are evaluated to determine whether they would result in a significant adverse impact on the environment. This memorandum will focus on these effects and offer mitigation measures to reduce or avoid any significant impacts that are identified. The criteria used to determine the significance of impacts may vary depending on the

nature of the project. According to Appendix G of the CEQA Guidelines, the proposed project would have a significant impact related to energy, if it would:

- Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation (Threshold A); and/or

- Conflict with or obstruct a State or local plan for renewable energy or energy efficiency (Threshold B).

The impact analysis focuses on the three sources of energy that are relevant to the proposed project: electricity, natural gas, and transportation fuel for vehicle trips associated with the project as well as the fuel necessary for project construction. The analysis of the project's electricity and natural gas use is based on the California Emissions Estimator Model (CalEEMod), which quantifies energy use for occupancy. The results of CalEEMod are included in the project's Air Quality and Greenhouse Gas Memorandum, prepared by Kimley-Horn (2022). Modeling related to project energy use was based primarily on the default settings in CalEEMod. The amount of operational fuel use was estimated using CalEEMod outputs for the project and CARB Emissions Factor (EMFAC) 2021 computer program for typical daily fuel use in Orange County. Construction fuel was calculated based on CalEEMod emissions outputs and conversion ratios from the Climate Registry.

Impacts and Mitigation Measures

Threshold A Would the project result in wasteful, inefficient, or unnecessary consumption of energy resources?

Energy consumption associated with the proposed project is summarized in Table 4: Project and Countywide Energy Consumption. As shown in Table 4, the project's increase in electricity usage would constitute an approximate 0.0003 percent increase in typical annual electricity usage and an approximate 0.0002 percent increase in typical annual natural gas consumption in the County. Construction-related off-road automotive fuel consumption (i.e., fuel consumed during construction) would result in a 0.0064 percent increase in diesel and 0.0001 percent increase in gasoline consumption. During operations, on-road automotive fuel consumption (i.e., fuel consumed from operational vehicle trips to and from the project site) would result in a 0.0007 percent increase in diesel and 0.0005 percent increase in gasoline over Countywide automotive fuel consumption.

Table 4: Project and Countywide Energy Consumption			
Energy Type	**Project Annual Energy Consumption**	**Orange County Annual Energy Consumption[1,2]**	**Percentage Increase Countywide**
Operational Electricity and Natural Gas[3]			
Electricity Consumption	49,122 kWh	18,931,838,620 kWh	0.0003%
Natural Gas Consumption	1,338 therms	580,187,556 therms	0.0002%
Automotive Fuel Consumption[4]			
Project Construction[5,6]			
Diesel	8,719 gallons	135,727,658 gallons	0.0064%
Gasoline	795 gallons	1,142,034,463 gallons	0.0001%
Project Operations			
Diesel	734 gallons	135,727,658 gallons	0.0005%
Gasoline	8,513 gallons	1,142,034,463 gallons	0.0007%

Notes:

1. The project increases in electricity and natural gas consumption are compared with the total consumption in orange County in 2021.
2. The project increases in automotive fuel consumption are compared with the countywide fuel consumption (projected) in 2024.
3. Electricity and natural gas consumption would be nominal during project construction, and therefore is not quantified in this table.
4. Countywide fuel consumption is from the California Air Resources Board EMFAC2021 model.
5. Construction fuel consumption is based on equipment and load factors from California Emissions Estimator Model (CalEEMod version 2020.4.0).
6. The estimated construction fuel consumption is based on the project's construction equipment list timing/phasing, and hours of duration for construction equipment, as well as vendor, hauling, and construction worker trips.

Refer to Appendix A: Energy Data for assumptions used in this analysis.

Construction-Related Energy

During construction, the project would consume energy in two general forms: (1) the fuel energy consumed by construction vehicles and equipment; and (2) bound energy in construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass.

Fossil fuels used for construction vehicles and other energy-consuming equipment would be used during grading, paving, and building construction. Fuel energy consumed during construction would be temporary in nature and would not represent a significant demand on energy resources. Some incidental energy conservations would occur during construction through compliance with State requirements that equipment not in use for more than five minutes be turned off. Project construction equipment would also be required to comply with the latest EPA and California Air Resources Board engine emissions standards. These emissions standards require highly efficient combustion systems that maximize fuel efficiency and reduce unnecessary fuel consumption. Due to

increasing transportation costs and fuel prices, contractors and owners have a strong financial incentive to avoid wasteful, inefficient, and unnecessary consumption of energy during construction.

Substantial reductions in energy inputs for construction materials can be achieved by selecting building materials composed of recycled materials that require substantially less energy to produce than non-recycled materials. The incremental increase in the use of energy bound in construction materials such as asphalt, steel, concrete, pipes and manufactured or processed materials (e.g., lumber and gas) would not substantially increase demand for energy compared to overall local and regional demand for construction materials. It is reasonable to assume that production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest in minimizing the cost of doing business.

While construction activities would consume fuels, project-related consumption of such resources would be temporary and would cease upon the completion of construction. In addition, mobile equipment energy usage during construction would be minimized as the project would comply with CARB's idling regulations, which restrict idling diesel vehicles and equipment to five minutes. Additionally, consistent with state requirements, all construction equipment would meet CARB Tier 3 In-Use Off-Road Diesel Engine Standards. Engines are required to meet certain emission standards, and groups of standards are referred to as Tiers. A Tier 0 engine is unregulated with no emission controls, and each progression of standard level (i.e., Tier 1, Tier 2, Tier 3, etc.) generate lower emissions, use less energy, and are more advanced technologically than the previous tier. CARB's Tier 3 In-Use Off-Road Diesel Engine Standards requires that construction equipment fleets become cleaner and use less energy over time.

As indicated in Table 4, the overall diesel fuel consumption during construction of the project would be 8,719 gallons and gasoline consumption would be 795 gallons, which would result in a nominal increase (0.0064 percent and 0.0001 percent, respectively) in fuel use in the County. As such, project construction would have a minimal effect on the local and regional energy supplies. It is noted that construction fuel use is temporary and would cease upon completion of construction activities. There are no unusual project characteristics that would necessitate the use of construction equipment that would be less energy-efficient than at comparable construction sites in the region or State. Construction fuel consumption would not be any more inefficient, wasteful, or unnecessary than other similar development projects of this nature. Therefore, potential impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources from project construction would be less than significant impact and no mitigation would be required.

Operational Energy

Energy Demand

Transportation Energy Demand

Pursuant to the Federal Energy Policy and Conservation Act of 1975, the National Highway Traffic and Safety Administration (NTSA) is responsible for establishing additional vehicle standards and for revising existing standards. Compliance with Federal fuel economy standards is not determined for each individual vehicle model. Rather, compliance is determined based on each manufacturer's average fuel economy for the portion of their vehicles produced for sale in the United States. Table 4 provides an estimate of the daily fuel consumed by vehicles traveling to and from the project site. As indicated in Table 4, project operations are estimated to consume approximately 734 gallons of diesel fuel and 8,513 gallons of gasoline fuel per year, which would increase Countywide automotive fuel consumption by 0.0005 percent and 0.0007 percent, respectively. The project would not result in any unusual characteristics that would result in excessive long-term operational fuel consumption. Fuel consumption associated with vehicle trips generated by the project would not be considered inefficient, wasteful, or unnecessary in comparison to other similar developments in the region.

Building Energy Demand

Operations of the proposed project would require approximately 49,122 kWh of electricity per year and approximately 1,338 therms of natural gas per year; refer to Table 4. The proposed project would be required to comply with Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water and space heating and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy usage. Furthermore, the electricity provider, SCE, is subject to California's Renewables Portfolio Standard (RPS). The RPS requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33 percent of total procurement by 2020 and to 50 percent of total procurement by 2030. Renewable energy is generally defined as energy that comes from resources which are naturally replenished within a human timescale such as sunlight, wind, tides, waves, and geothermal heat. The increase in reliance of such energy resources further ensures projects will not result in the waste of the finite energy resources.

As indicated in Table 4, operational energy consumption would represent an approximate 0.0003-percent increase in electricity and 0.0002 percent increase in natural gas consumption over the current Countywide usage. The project would adhere to all Federal, State, and local requirements for energy efficiency, including the Title 24 standards. As such, the project would not result in the inefficient, wasteful, or unnecessary consumption of building energy.

Conclusion

As shown in Table 4, the increase in electricity and automotive fuel consumption over existing conditions is minimal (less than one percent). For the reasons described above, the project would not place a substantial demand on regional energy supply or require significant additional capacity, or significantly increase peak and base period electricity demand. Thus, the project would not cause a wasteful, inefficient, and unnecessary consumption of energy during project construction, operation, and/or maintenance, or preempt future energy development or future energy conservation. Therefore, potential impacts associated with the wasteful, inefficient, or unnecessary consumption of energy resources from the project would be less than significant, and no mitigation would be required.

Threshold B Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Title 24, Part 11, contains voluntary and mandatory energy measures that are applicable to the project under the California Green Building Standards Code. As discussed above, the project would result in an increased demand for petroleum during construction. In accordance with Title 24 Part 11 mandatory compliance, the Applicant would have (a) 50 percent of its construction and demolition waste diverted from landfills; (b) mandatory inspections of energy systems to ensure optimal working efficiency; (c) and low pollutant emitting exterior and interior finish materials, such as paints. Compliance with all of these mandatory measures would decrease the consumption of petroleum.

The project would not conflict with any of the federal, state, or local plans for renewable energy and energy efficiency. Because the project would comply with Parts 6 and 11 of Title 24 and with City of Buena Park General Plan policies, no conflict with existing energy standards and regulations would occur. Therefore, impacts associated with renewable energy or energy efficiency plans would be considered less than significant.

Appendix A

Energy Data

Construction Fuel Consumption

On-Site Diesel[1] (off-road construction Equipment)	$MTCO_2e$	Gallons of Fuel[4]	Current County Fuel	Percent
Demolition	0	0		
Site Preparation/Grading	18	1,773		
Building Construction	52	5,123		
Paving	12	1,182		
Architectural Coating	4	394		
Total	86	8,473	135,727,658	0.0062%

Off-Site Diesel[1] (on-road construction trips)				
Demolition	0	0		
Site Preparation/Grading	1	49		
Building Construction	2	197		
Paving	0	0		
Architectural Coating	0	0		
Total	3	246	135,727,658	0.0002%

Off-Site Gasoline[2]				
Demolition	0	0		
Site Preparation/Grading	1	114		
Building Construction	4	454		
Paving	2	227		
Architectural Coating	0	0		
Total	7	795	1,142,034,463	0.0001%

Total Diesel Fuel		8,719	135,727,658	0.0064%
Total Gasoline Fuel		795	1,142,034,463	0.0001%
Total Construction Fuel	96	9,514		

Construction Phase[3]	Demolition			Site Preparation			Grading		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2023	0	0	0	6	0	0	12	1	1
2024									
Total	**0**	**0**	**0**	**6**	**0**	**0**	**12**	**1**	**1**

Construction Phase[3]	Infrastructure + Building Construction			Paving			Architectural Coating		
	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)	On-Site Diesel (Off-Road)	Off-Site Diesel (Hauling/Vendor)	Off-Site Gasoline (Worker)
2023	48	2	4						
2024	4	0	0	12	0	2	4	0	0
Total	**52**	**2**	**4**	**12**	**0**	**2**	**4**	**0**	**0**

Notes:

[1] Fuel used for off-road, hauling, and vendor trips assumed to be diesel.

[2] Fuel used for worker trips assumed to be gasoline.

[3] $MTCO_2e$ rates from CalEEMod (3.0 Construction Details).

[4] For CO2e emissions, see Chapter 13 (page 94); Conversion Ratios: Climate Registry, General Reporting Protocol, 2016.

Construction Water Energy

Daily Soil Disturbance[1]	2	acres
Days of Soil Disturbance[2]	35	days
Water Concentration[3]	3,020	gallons/acre
Water Energy Intensity[4]	11,110	kWh/MG
Total Construction Water	0.16	million gallons
Construction Water Energy	1,761	kWh
	0.0018	GWh

Notes:

[1] Total daily acres disturbed from offroad equipment per CalEEMod (3.0 Construction Detail) and maximum SCAQMD LST values for soil-disturbing equipment.

[2] Number of days of construction with soil-disturbing equipment per CalEEMod (3.0 Construction Detail).

[3] Water application rate per Air and Waste Management Association's Air Pollution Engineering Manual.

[4] Water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343.

Operational Fuel

Vehicle Type	Percent[1]	Annual VMT[2]	MPG[3]	Annual Fuel (Gallons)	Fuel Type	Orange Gallons[4]	RS Percent
Passenger Cars (Gasoline)	0.94	183,875	21.6	8,513	Gas	1,142,034,463	0.0007%
Light/Medium Trucks	0.05	9,934	17.2	578	Diesel	135,727,658	0.0004%
Heavy Trucks/Other	0.00	954	6.1	156	Diesel	135,727,658	0.0001%
Total Diesel	0.06	194,778		734			0.0005%

Land Use[5]	LDA	LDT1	LDT2	MCY	MDV	LHD1	LHD2	MHD	OBUS	UBUS	SBUS	MH	HHD
Condo High Rise	0.5462	0.0595	0.1859	0.0245	0.1279	0.0243	0.0066	0.0145	0.0007	0.0004	0.0007	0.0039	0.0049

Notes:

[1] Percent of vehicle trip distribution based on fleet mix from CalEEMod (4.4 Fleet Mix).

[2] Total annual operational VMT based on mitigated annual VMT from CalEEMod (4.2 Trip Summary Information).

[3] Average fuel economy derived from Department of Transportation.

[4] Total annual county fuel per EMFAC 2017 model of projected operational fuel usage.

Operational Water Energy

Mitigated Indoor	1.0	million gallons
Indoor Energy Intensity Factor[1]	13,021	kWh/MG
Mitigated Outdoor	0	million gallons
Outdoor Energy Intensity Factor[2]	11,110	kWh/MG
Operational Water Energy	18,132	kWh

Land Use[3]	Unmitigated (MG)		Mitigated (MG)	
	Indoor	Outdoor	Indoor	Outdoor
Condo High Rise	1	0	1	0
City Park	0	0	0	0
Other asphalt Services	0	0	0	0
Total Operational Water	**1**	**0**	**1**	**0**

Notes:

[1] Indoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343. Factor includes supply, treatment, distribution, and wastewater.

[2] Outdoor water energy intensity factor for county subarea per CalEEMod User Guide, Appendix D, page D-343. Factor includes supply, treatment, and distribution.

[3] Operational water use values per CalEEMod (7.2 Water by Land Use).

Elecricity/Natural Gas Energy

	Mitigated Project Annual Energy	Orange County Annual Energy[3]	Percentage Increase
Electricity (kWh/yr)	49,122	18,931,838,620	0.0003%
Natural Gas (kBTU/yr)	133,795	58,018,755,600	0.0002%
Natural Gas (therms/yr)	1,338	580,187,556	0.0002%
Natural Gas (ft^3/yr)	133,768		

Land Use	Electricity[1] (kWh/yr)		Natural Gas[2] (kBTU/yr)	
	Unmitigated	Mitigated	Unmitigated	Mitigated
Condo High Rise	49,122	49,122	133,795	133,795
City Park	0	0	0	0
Other asphalt Services	0	0	0	0
Total Energy	**49,122**	**49,122**	**133,795**	**133,795**

Notes:

[1] Electricity use per CalEEMod (5.3 Energy by Land Use).

[2] Natural Gas use per CalEEMod (5.2 Natural Gas by Land Use).

[3] County total energy values from California Energy Commission energy reports available through ecdms.energy.ca.gov.

Appendix E

Geotechnical and Liquefaction

MR. SEAN MO, PRINCIPAL
ANDMORE PARTNERS, INC.
3530 WILSHIRE BOULEVARD, SUITE NO. 1830
LOS ANGELES, CALIFORNIA 90010

PRELIMINARY
GEOTECHNICAL ENGINEERING INVESTIGATION
AND
LIQUEFACTION STUDY

FOR

7682-7712 CRAIG AVENUE
BUENA PARK

Prepared By

SASSAN Geosciences, Inc.
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869

November 22, 2022

SAS SASSAN Geosciences, Inc.

November 22, 2022

Mr. Sean Mo, Principal
Andmore Partners, Inc.
3530 Wilshire Boulevard, Suite No. 1830
Los Angeles, CA 90010

Subject: Preliminary Geotechnical Engineering Investigation
and Liquefaction Study
7682 -7712 Craig Avenue, Buena Park
SAS File Number: 9SMO183

Dear Mr. Mo:

SASSAN Geosciences, Inc. (SAS) has completed a preliminary geotechnical engineering investigation and liquefaction study for the subject property. Our investigation was performed to determine the nature of surface and subsurface soils and to evaluate their physical and engineering properties. The results were then analyzed, and recommendations for foundation design and related parameters were prepared. This report presents our findings and recommendations.

LOCATION AND SITE DESCRIPTION

The subject property is located on the south side of Craig Avenue in the City of Buena Park, California. A vicinity map is presented on Figure A-1 in Appendix A of this report.

The property is located in a relatively level area, and is comprised of four adjoining, vacant lots. The property borders Craig Avenue on the north, parking lots of neighboring office buildings on the south and east, the Brea Creek (channel) on the south-west, and a one-story single-family residence on the west. A plot plan indicating the locations of the existing and proposed improvements is presented on Figure A-2 in Appendix A of this report.

At the time of our field investigation, the eastern portion of the property was covered by dense, tall annual grasses, and the western portion of the property was used as a storage area for various equipment and materials, which restricted the access to some parts of the property.

OBJECTIVE

The owners wish to assess the geotechnical characteristics of the underlying ground in order to construct three-story senior living structures at a street level at the subject property. A plot plan indicating, the locations of the proposed improvements, is presented on Figure A-2 in Appendix A of this report.

FIELD INVESTIGATION

Subsurface exploration was performed on July 22, 2019 and involved drilling two (2) boreholes to a maximum depth of approximately fifty (50) feet. The drilling operation was performed utilizing an eight-inch diameter hollow stem auger, mounted on a drilling rig. Two and one-half-inch (2.5) diameter split spoon ring samples and standard penetration test (SPT) samples were obtained from the boreholes with a thirty (30) inch drop of a one-hundred-forty (140) pound hammer. Earth materials encountered were

classified in accordance with the visual-manual procedures of the Unified Soil Classification System.

In addition, on July 22, 2019 this office (SASSAN Geosciences, Inc.) has performed CPT soundings at the project site to evaluate the liquefaction potential and seismically induced settlements. A total of ten (10) CPT soundings have been performed at the subject property. A plot plan indicating the approximate locations of the bore holes and CPT tests is presented on Figure A-2 in Appendix A of this report.

EARTH MATERIALS

The earth materials encountered in the boreholes and test pits consist of up to approximately two (2) feet of fill underlain by younger alluvial deposits, which extend to the depths explored. Detailed logs of the boreholes are presented on Figures B-1 and B-2 in Appendix B of this report.

The density of alluvium increases by depth, however, the conventional earth moving machinery should be able to handle the grading operation. We do not anticipate that ripability becomes an issue during the grading at the subject site.

A copy of a regional geologic map (Dibblee) is presented on Figure D-1 in Appendix D of this report.

GROUNDWATER

Groundwater seepage was encountered in the boreholes at a depth of approximately forty-two (42) feet. However, Seismic Hazard Evaluation for the La Habra Quadrangle by the State of California indicates that the highest historic water level in this area was recorded near the ground surface. A copy of Highest Ground Water Levels map is presented on Figure C-3 in Appendix C of this report.

LABORATORY TESTING

Moisture content (ASTM D 2216), shear strength (ASTM D 3080) and consolidation (ASTM D 2435) tests were performed for selected samples of soil considered to be representative of those encountered. The results of direct shear tests are presented on Figure B-3, and the results of consolidation tests are presented on Figures B-4, B-5, B-6 and B-7 in Appendix B of this report. Evaluation of the test data is reflected throughout this report.

SEISMIC HAZARDS

Seismically Induced Landslide: The subject property is located in a relatively level area. seismically induced landslides are not of concern for this property. In addition, on the "State of California Seismic Hazard Zones" map the site is located outside of the seismically induced landslide hazard zones. A copy of the Seismic Hazard Zones Map is presented on Figure C-1 in Appendix C of this report.

Liquefaction: The subject property is shown on the "State of California Seismic Hazard Zones" map, presented on Figure C-1 in Appendix C of this report. The site is located within a potential liquefaction hazard zone. Detailed information regarding the liquefaction analyses, performed for this property, is provided in the following section of this report.

Fault and Ground Rupture: The subject property is located at a significant distance from the nearest active fault. No ground rupture has been observed at the site and same is not anticipated or expected. A copy of the Earthquake Fault Zones Map is presented on Figure C-2 in Appendix C of this report.

Seismically Induced Settlement: Based on our analyses, the maximum total seismically induced settlements are expected to be less than 2.1 inches.

Tsunami: The property is situated at a significant distance from the ocean. As such, tsunami is not a concern for this property.

Seiche: The subject property is situated on a significant distance from the nearest enclosed body of water. As such, seiche is not of a concern for this property.

Expansive Soils: The recommendations provided for the design of the foundations and slabs-on-grade consider highly expansive earth materials.

CAUSES OF SOIL LIQUEFACTION

The basic cause of liquefaction of sands has been understood, in a qualitative way, for many years. If a saturated sand is subjected to ground vibrations, it tends to compact and decrease in volume; if drainage is unable to occur, the tendency to decrease in volume results in an increase in pore water pressure, and if the pore water pressure builds up to the point at which it is equal to the overburden pressure, the effective stress becomes zero, the sand loses its strength completely, and it develops a liquefied state.

In more quantitative terms, it is now generally believed that the basic cause of liquefaction in saturated cohesionless soils during earthquakes is the buildup of excess hydrostatic pressure due to the application of cyclic shear stresses induced by the ground motions. These stresses are generally considered to be due primarily to upward propagation of shear waves in a soil deposit, although other forms of wave motions are also expected to occur. Thus, soil elements can be considered to undergo a series of cyclic stress conditions. The stress series being somewhat random in pattern but nevertheless cyclic in nature.

As a consequence of the applied cyclic stresses, the structure of the cohesionless soil tends to become more compact with a resulting transfer of stress to the pore water and a reduction in stress on the soil grains. As a result, the soil grain structure rebounds to the extent required to keep the volume constant, and this interplay of volume reduction and soil structure rebound determines the magnitude of the increase in pore water pressure in the soil (Martin et al, 1975). The mechanism can be quantified so that the pore pressure increases due to any given sequence of stress applications can be computed from a knowledge of the stress-strain characteristics, the volume change characteristics of the sand under cyclic strain conditions, and the rebound characteristics of the sand due to stress reduction.

As the pore water pressure approaches a value equal to the applied confining pressure, the sand begins to undergo deformations. If the sand is loose, the pore pressure will increase suddenly to a value equal to the applied confining pressure, and the sand will rapidly begin to undergo large deformations with shear strains that may exceed ~20 percent or more. If the sand will undergo virtually unlimited deformations without mobilizing significant resistance to deformation, it can be said to be liquefied. If, on the other hand, the sand is dense, it may develop a residual pore water pressure, on completion of a full stress cycle, which is equal to the confining pressure (a peak cyclic pore pressure ratio of 100%), but when the cyclic stress is reapplied on the next stress cycle, or if the sand is subjected to monotonic loading, the soil will tend to dilate, the pore pressure will drop if the sand is undrained, and the soil will ultimately develop enough resistance to withstand the applied stress. However, it will have to undergo some degree of deformation to develop the resistance, and as the cyclic loading continues, the amount of deformation required to produce a stable condition may increase. Ultimately, however, for any cyclic loading condition, there appears to be a cyclic strain level at which the soil will be able to withstand any number of cycles of a given stress without further increase in maximum deformation (De Alba et al, 1976). This type of behavior is termed “cyclic mobility” and it is considerably less serious than liquefaction, its significance depending on the magnitude of the limiting strain. It should be noted, however, that once the cyclic stress applications stop, if they return to a zero stress condition, there will be a residual pore water pressure in the soil equal to the overburden pressure, and this will inevitably lead to an upward flow of water in the soil which could have deleterious consequences for overlying layers.

Liquefaction of a sand in this way may develop in any zone of a deposit where the necessary combination of in-situ conditions and vibratory deformations may occur. Such a zone may be at the surface or at some depth below the ground surface, depending only on the state of the sand and the induced motions.

However, liquefaction of the upper layers of a deposit may also occur, not as a direct result of the ground motions to which they are subjected, but because of the development of liquefaction in an underlying zone of the deposit. Once liquefaction develops at a some depth in a mass of sand, the excess hydrostatic pressures in the liquefied zone will dissipate by flow of water in an upward direction. If the hydraulic gradient becomes sufficiently large, the upward flow of water will induce a "quick" or liquefied condition in the surface layers of the deposit. Liquefaction of this type will depend on the extent to which the necessary hydraulic gradient can be developed and maintained; this, in turn, will be determined by the compaction characteristics of the sand, the nature of ground deformations, the permeability of the sand, the boundary drainage conditions, the geometry of the particular situation, and the duration of the induced vibrations.

It is now possible to analyze the generation and dissipation of pore water pressures in soil deposits during and following earthquakes (Finn et al, 1977; Liou et al, 1977; Martin and Seed, 1979; Seed et al, 1976), and the results of such studies can provide valuable insights into possible site behavior in some cases. However, the level of analytical capability used in these studies has probably outstretched our engineering ability to provide details of soil profile stratification and soil property determinations with sufficient accuracy to make the analytical results reliable. Furthermore, in dealing with sands, silty sands and silts, for which most liquefaction problems occur, dissipation effects during an earthquake are not significant. Accordingly it is customary to base evaluations of soil liquefaction or cyclic mobility potential on the assumption that all sand layers are undrained during the period of earthquake shaking. If under undrained conditions, it can be shown that every layer in a soil profile has an adequate margin of safety against the development of liquefaction or cyclic mobility, then no significant pore pressures will be generated and consideration of pore pressure dissipation is unnecessary. This approach is followed in the procedures outlined in the following pages for evaluating the liquefaction potential of soil deposits.

General Method Of Evaluating Liquefaction Potential

The liquefaction potential of any given soil deposit is determined by a combination of the soil properties, environmental factors and characteristics of the earthquake to which it may be subjected. Specific factors which any liquefaction evaluation should desirably take into account include the following:

Soil Properties:

- Dynamic shear modulus
- Damping characteristics
- Unit weight
- Grain characteristics
- Relative density
- Soil structure

Environmental Factors:

- Method of soil formation
- Seismic history
- Geologic history (aging, cementation)
- Lateral earth pressure coefficient
- Depth of water table
- Effective confining pressure

Earthquake Characteristics:

Intensity of ground shaking
Duration of ground shaking

Liquefaction Analyses Utilizing SPT Data

The analyses were performed to evaluate the potential hazards of soil liquefaction at the subject property due to earthshaking during a major earthquake. The analyses were performed for all the soil layers encountered in the boreholes utilizing the data obtained during the field exploration (depths of soil layers SPT tests; field blow count values from Standard Penetration Tests) and from the laboratory test results (unit weight of soil; percentage of the fine materials passing through #200 sieve).

Our analyses indicate that the native earth materials, underlying the subject property, at various layers possess factors of safety against liquefaction that are below the minimum Code requirements, and are prone to liquefaction. Copies of the liquefaction analyses based on SPT data are presented in Appendix E of this report.

Based on our analyses, utilizing SPT data, the maximum total seismically induced settlements are expected to be less than 1.7 inches. Copies of the seismically induced settlement analyses based on SPT data are presented in Appendix F of this report.

Liquefaction Analyses Utilizing CPT Data

This office (SASSAN Geosciences, Inc.) performed CPT soundings at the project site to evaluate the liquefaction potential and seismically induced settlements. Our analyses indicate that the native earth materials, underlying the subject property, at various layers possess factors of safety against liquefaction that are below the minimum Code requirements, and are prone to liquefaction. The results of the liquefaction analyses based on CPT data are presented in Appendix G, and a complete copy of the liquefaction analysis based on CPT data is presented in the Enclosures.

Based on our analyses, utilizing CPT data, the maximum total seismically induced settlements are expected to be less than 1.6 inches. Copies of the seismically induced settlement analyses based on CPT data are presented in Appendix H of this report.

CONCLUSIONS AND RECOMMENDATIONS

General

The referenced property is considered to be suitable for the proposed construction from a geotechnical engineering standpoint, provided that our recommendations are incorporated into the approved construction plans.

The conclusions and recommendations presented here are based on our observations at the site during our investigation, engineering judgment, CPT soundings and analysis of the soil samples obtained from the boreholes. Minor variations of subsurface conditions are common, and major variations are possible.

General Grading

Grading areas must be stripped of all vegetation, debris, and other deleterious material. All loose soil disturbed by the removal of trees and/or structures (if applicable) must be removed and recompacted.

The existing fill is up to approximately two (2) feet thick and is not suitable for foundation support. Where compacted earth materials are supporting the structural load, a minimum of three (3) feet below the bottom of the proposed mat foundation, and an area, comprised of a minimum of five (5) feet (or equal to the depth of removal, whichever is greater) beyond the footprint of the proposed structure, must be over-excavated. At locations where new fill is proposed, the existing fill must be entirely removed and replaced with a certified engineered fill. The proposed new fill must be placed in horizontal layers, and must be benched into undisturbed competent younger alluvial deposits.

Temporary Excavations

The review of the architectural plans indicates that excavations over five (5) feet in depth are not anticipated during the proposed construction. The temporary excavations will be performed at a distance from the property lines that is more than the depth of the excavations. Based on the integrity of the site earth materials, it is our opinion that other unsurcharged temporary excavations may be performed continuously in accordance with the following table:

Maximum Depth of Cut (ft)	*Maximum Slope Ratio (H:V)*
0-5	Vertical
>5	1:1

When the above system becomes impractical, shoring has to be designed for the temporary excavations. If such a condition arises, this office can provide the necessary strength parameters needed in the design of shoring elements.

The contractor may perform the excavation under continuous monitoring of a grading inspector who would ensure the quality of grading and presence of competent earth materials. The excavations may be left open for a temporary period of four (4) weeks. A grading inspector must be present when laborers are working within five (5) feet of the temporary cut area.

Foundations

The proposed structures must be supported by a mat foundation. The proposed mat foundation must be founded into certified engineered fill. Where compacted earth materials are supporting the structural load, a minimum of three (3) feet below the bottom of the proposed mat foundation, and an area, comprised of a minimum of five (5) feet (or equal to the depth of removal, whichever is greater) beyond the footprint of the proposed structure, must be over-excavated. The fill, placed in over-excavated area, must be compacted. In addition, the bottom of the proposed mat foundation must be below a plane with a slope of one horizontal to one vertical (1:1), projected upward from the bottom edge of adjacent existing footings (if applicable).

An allowable bearing capacity of 1,000 psf must be used for soils beneath the proposed mat foundation, founded a minimum of twenty-four (24) inches into certified engineered fill. The maximum loading for the mat foundation in localized areas should not exceed 1,500 psf, and the maximum extent of the area, allowed with the maximum localized loading, should not exceed 15 feet by 15 feet. Copies of the bearing capacity analyses are presented in Appendix J of this report.

The allowable bearing value is for dead-plus-live loads and may be increased by thirty (30) percent for momentary wind and seismic loads. The following minimums apply to foundations:

1. The proposed mat foundation must be founded a minimum of twenty-four (24) inches into certified engineered fill.

2. The final design of the proposed mat foundation must be provided by a structural engineer in conjunction with this office.

3. A coefficient of friction of 0.25 must be utilized for resisting lateral loads at the contact surface of concrete and foundation soils.

4. Passive earth pressure increasing at the maximum rate of 250 psf per foot of depth, to a maximum of 2,500 psf, may be used in calculations.

5. The design modulus of subgrade reaction (k_s) for the subject property is 150 kcf.

6. Frictional and passive resistance of the proposed mat foundation may be combined, provided the passive bearing resistance does not exceed two-thirds of the allowable passive bearing.

7. All concrete elements of the substructure, which are in contact with the soil, must be constructed from concrete, based on Cement Type V for highly corrosive soils.

8. Due to the fact that the highest historic water level in this area was recorded near the ground surface, the damp-proofing for protection of the floors and wooden structures must be designed by a waterproofing specialist.

Settlements

Maximum total and differential settlements are expected to be less than four (4) and two (2) inches, respectively, provided that our recommendations are followed. Copies of the static settlements analyses are presented in Appendix I of this report. Copies of the seismically induced settlement analyses, based on SPT data, are presented in Appendix F of this report. Copies of the seismically induced settlement analyses, based on CPT data, are presented in Appendix H of this report.

Seismic Design Parameters

The seismic parameters for the design of the proposed structure based on the 2019 California Building Code are as follows:

Latitude	33° 52’ 42” N
Longitude	117° 59’ 58” W
Site Classification	D
Site Coefficient, F_a	1.2
Site Coefficient, F_v	1.7
Site Spectral Response Acceleration Parameters (g):	
Mapped Acceleration, S_S (0.2 sec.)	1.556
Mapped Acceleration, S_1 (1 sec.)	0.551
Adjusted Maximum Acceleration, S_{MS} (0.2 sec.)	1.867
Adjusted Maximum Acceleration, S_{M1} (1 sec.)	0.937
Design Acceleration, S_{DS} (0.2 sec.)	1.245
Design Acceleration, S_{D1} (1 sec.)	0.624

Conformance with the above listed criteria for seismic design does not constitute any kind of warranty, guarantee, or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and limb, and to prevent catastrophic failures, and not to avoid all damage, since such design may be economically prohibitive.

Engineered Fill

All fill earth materials must consist of clean soil that is free of vegetation and other debris. The fill must be placed in six- (6-) to eight- (8-) inch thick lifts at near optimum moisture content and compacted. Particles larger than three (3) inches in diameter must not be allowed in the backfill material. Earth materials must not be imported to the site without prior approval by the soil engineer. All engineered fill must be compacted to a minimum of ninety (90) percent of its maximum dry density (ASTM D 1557). Where cohesionless soil having less than fifteen (15) percent finer than 0.005 millimeter is used for fill, it must be compacted to a minimum of ninety-five (95) percent of its maximum dry density. Neither jetting nor water tamping are permitted.

Heavy construction equipment must be maintained at a minimum distance of three (3) feet from the existing structures. Hand-operated compaction equipment must be used to compact the backfill soils within this 3-foot-wide zone.

Driveway And External Slabs-On-Grade

The subgrade for the proposed driveway and external slabs-on-grade must consist of a minimum two (2) foot thick layer of certified compacted fill. The competent subgrade must be covered with four (4) inches of crushed miscellaneous aggregate (CMA) and compacted to ninety-five percent (95%) of its maximum dry density (ASTM D1557). The CMA must be covered by asphalt concrete, concrete slab, stone pavers or equal.

Pipe Bedding and Trench Backfill

The pipe bedding must consist of sand or similar granular material having a minimum sand equivalent value of thirty (30). The sand must be placed in a zone that extends a minimum of six (6) inches below and twelve (12) inches above the pipe for the full trench width. The bedding material must be compacted. The trench backfill above the pipe bedding may consist of approved, on-site or imported soils, and it must be compacted. Where utility trenches are parallel to the footings, the bottom of the trench must be located above a plane with a slope of 1:1, projected downward from the adjacent bottom edge of the footing.

Site Drainage

Drainage devices such as sloping sidewalks and area drains must be provided around the building to collect and direct all water away from the structure. Neither rain nor excess irrigation water should be allowed to collect or pond against foundations. The collected water must be directed to the proper drainage system via non-erosive devices. The actual site drainage, however, must be designed by the consulting civil engineer-of-record.

Based on the liquefaction analyses, the subject property is subject to liquefaction. As such, additional moisture must not be injected into the grounds. Therefore, use of permeable pavers or similar ground covers at the subject property is not recommended.

DESIGN REVIEW

We suggest that the geotechnical aspects of the project be reviewed by this firm during the design process. The scope of our services may include assistance to the design team by providing specific recommendations for special cases, reviewing the foundation design, reviewing the geotechnical portions of the project for possible cost savings through alternative approaches, and evaluating the overall applicability of our recommendations. Additional site-specific explorations may also be considered if significant foundation modifications are required using the above recommendations.

The owner should anticipate that both the consulting soils engineer must review and approve the detailed plans prior to issuance of any permits. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans include the recommendations contained in their reports.

INSPECTIONS

All excavations must be inspected and approved. All fill placed for engineering purposes must be tested for compaction and moisture content and certified. Inspection of excavations may also be required by the appropriate reviewing governmental agencies.

It is recommended that SAS be retained to verify compliance with the recommendations made in this report, to ensure compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event that exposed subsurface conditions differ from those anticipated herein.

A joint meeting among the parties involved in this project is recommended prior to the start of groundbreaking to discuss specific procedures and scheduling.

Inspections performed by SAS are for verification purposes only and shall under no circumstance relieve other parties involved in the design and construction from their obligation to perform work in accordance with the approved plans.

In the event that the recommendations contained herein are interpreted by others, SAS will not accept responsibility for such interpretations.

INVESTIGATION LIMITATIONS

The conclusions and recommendations presented in this report are based on the findings and observations in the field and the results of laboratory tests performed on representative samples. The soils encountered in the boreholes are believed to be representative of the total area; however, soil characteristics can vary throughout the site. SAS should be notified if subsurface conditions are encountered which differ from those described in this report.

This report has not been prepared for use by parties or projects other than those named and described above. It may not contain sufficient information for other parties or other purposes. The conclusions and recommendations presented in this report are professional opinions. These opinions have been derived in accordance with current standards of geotechnical engineering practice, field observations and laboratory test results. No other warranty is expressed or implied.

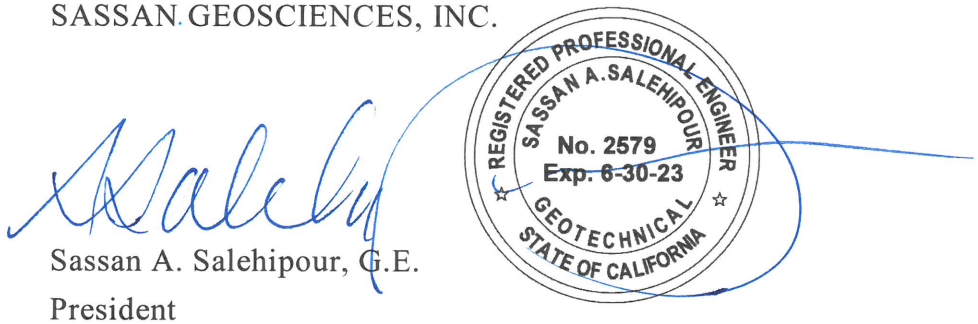
Samples secured for this investigation will be retained in our laboratory for a period of thirty (30) days from the date of this report and will be disposed after this period unless other arrangements are made.

This report should be reviewed and updated after a period of one year or if the project concept changes from that described herein.

We appreciate the opportunity to be of service to you. If you have any questions, please call our office.

Sincerely,

SASSAN GEOSCIENCES, INC.



Sassan A. Salehipour, G.E.
President

SAS:ak/9smo183a3.doc
Appendices

REFERENCES:

1. California Division of Mines and Geology, 1997, Seismic Hazard Zone Report for the La Habra 7.5 Minute Quadrangle, Los Angeles and Orange Counties, California; SHZR 01

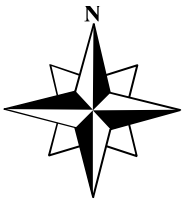
2. California Division of Mines and Geology, 1998, Seismic Hazard Zones Map for the La Habra Quadrangle, Los Angeles County, California; Scale 1:24,000

3. California Division of Mines and Geology, 1991, Official Map of Earthquake Fault Zones, La Habra Quadrangle; Scale 1:24,000

4. Dibblee, T.W., 2001, Geologic Map of the Whittier and La Habra Quadrangles, Los Angeles and Orange Counties, California. Dibblee Geological Foundation, Santa Barbara, California; Map DF-74; Scale 1:24,000

APPENDIX A





SAS	VICINITY MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE A-1

CRAIG AVENUE

P/L

LIMIT OF
OVER EXCAVATION

CPT-1

CPT-6

CPT-7

PROPOSED 3-STORY BUILDING

B-1

CPT-5

CPT-10

B-2

CPT-9

CPT-2

CPT-8

PROPOSED 3-STORY BUILDING

CPT-4

CPT-3

EXISTING PARKING

EXISTING 2-STORY
BUILDING

N

SCALE: 1" = 30'

EXPLANATION

CPT-10 — CPT NUMBER AND LOCATION

B-2 — BOREHOLE NUMBER AND LOCATION

FIGURE
A-2

PLOT PLAN

7682, 7692, 7712, 7722 CRAIG AVE, BUENA PARK

SAS

9MOI183

APPENDIX B

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					0	**Fill:** Dark brown, damp to moist, silty clay with trace to some sand, few gravel pieces, many roots
SPT-1			16			**Alluvium:** Gray, moist, firm, silty clay with trace sand
					5	
R-1	102	13				
SPT-2			17			
					10	
R-2	101	20				Dark gray, moist, stiff, silty clay
SPT-3			14			
					15	
R-3	103	14				Gray, wet, medium dense, fine silty sand
SPT-4			21			
					20	
R-4	105	17				Gray, wet, stiff, fine sandy silt and silty sand
SPT-5			23			Gray, wet, stiff, fine sandy silt and silty sand
					25	
SPT-6			27			Gray, wet, stiff, fine sandy silt
					30	
SPT-7			33			Light gray, moist, dense, silty fine sand
					35	
SPT-8			21			Gray, wet, stiff, fine sandy silt
					40	

R = Ring Sample; SPT = SPT Sample

Continue

SAS	LOG OF BORE HOLE NUMBER ONE (B-1) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-1a

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					40	Gray, wet, stiff, fine sandy silt
						Water Seepage
SPT-9			77			Gray, wet, very dense, fine to medium sandy silt
					45	
SPT-10			47			Gray, wet, very dense, fine to medium sandy silt
					50	Gray, wet, very dense, silty fine to medium sand
SPT-11			51			
					55	
					60	
					65	
					70	
					75	
					80	

Excavation Terminated at Depth of 12 Feet
Water Seepage Encountered at Depth of 12 Feet

SPT = SPT Sample

SAS	LOG OF BORE HOLE NUMBER ONE (B-1) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-1b

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					0	**Fill:** Dark brown, damp to moist, silty clay with sand, many roots
SPT-1			15			**Alluvium:** Dark gray, moist, firm, silty clay with caliche
					5	
R-1	105	13				
SPT-2			18			
					10	
R-2	94	16				Dark gray, moist, stiff, silty clay
SPT-3			20			
					15	
R-3	100	18				Dark gray, moist, stiff, silty clay
SPT-4			19			Light gray, moist, dense, silty fine sand
					20	
R-4	102	7				Light gray, moist, dense, silty fine sand
SPT-5			31			Light gray, moist, dense, silty fine sand
					25	
SPT-6			37			Light gray, moist, dense, silty fine sand
					30	
SPT-7			28			Gray, wet, stiff, fine sandy silt
					35	
SPT-8			27			Gray, wet, very dense, silty fine to medium sand
					40	

R = Ring Sample; SPT = SPT Sample

Continue

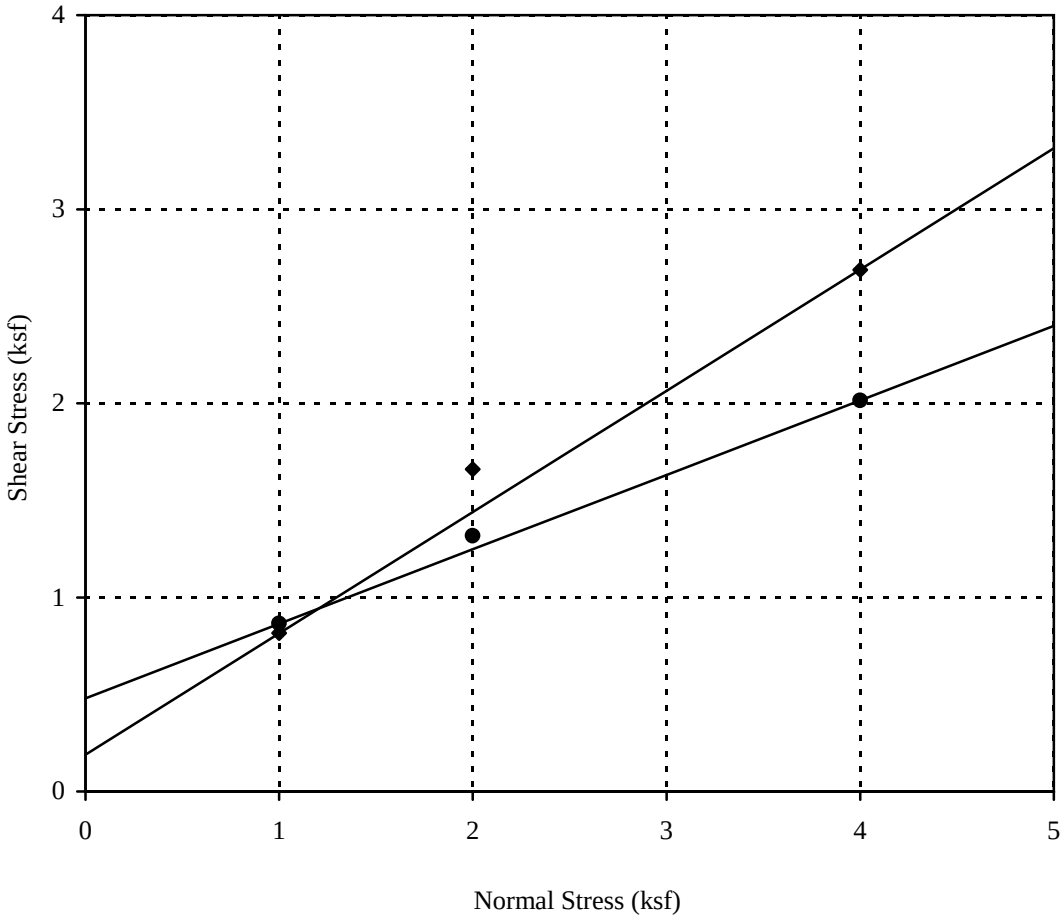
SAS	LOG OF BORE HOLE NUMBER TWO (B-2) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-2a

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					40	Gray, wet, very dense, silty fine to medium sand
						Water Seepage
SPT-9			15			
					45	
						Gray, wet, stiff, fine sandy silt
SPT-10			29			
					50	Gray, wet, very dense, silty fine to medium sand
SPT-11			39			
					55	
					60	
					65	
					70	
					75	
					80	

Excavation Terminated at Depth of 12 Feet
Water Seepage Encountered at Depth of 12 Feet

SPT = SPT Sample

SAS	LOG OF BORE HOLE NUMBER TWO (B-2) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-2b



Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Cohesion (psf)	Friction Angle (deg)	Remarks
u	B-1	R-3	15	SM	190	32	1
●	B-2	R-2	10	CL	480	21	2

Remarks:

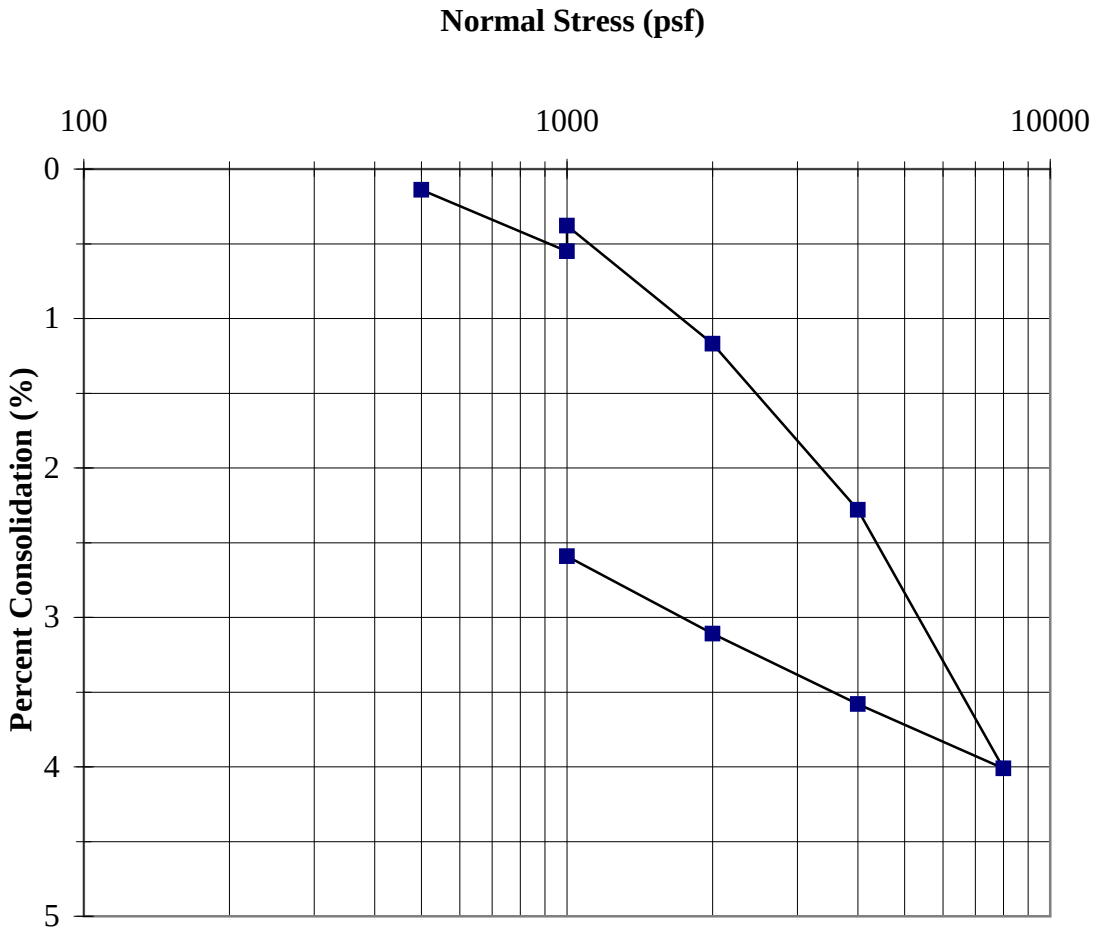
1 - ALLUVIUM; Saturated Moisture Content: 22%, Dry Density: 103 pcf; Ultimate

2 - ALLUVIUM; Saturated Moisture Content: 29%, Dry Density: 94 pcf; Ultimate

SAS	DIRECT SHEAR TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-3

CONSOLIDATION TEST RESULTS

ASTM D 2435 - 90

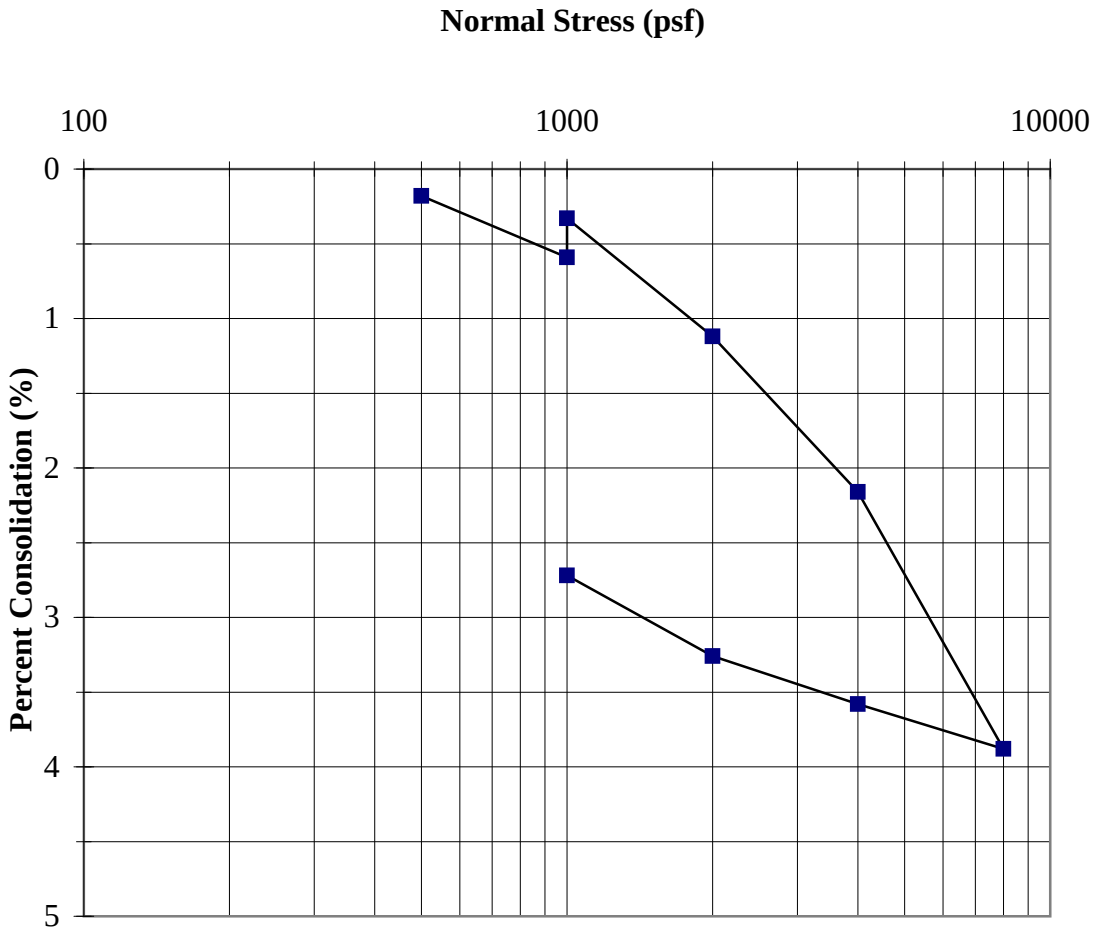


Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Remarks
■	B-2	R-1	5	CL	γ_d = 105.3 pcf, w/c = 21.8%, S = 99.8

SAS	CONSOLIDATION TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-4

CONSOLIDATION TEST RESULTS

ASTM D 2435 - 90

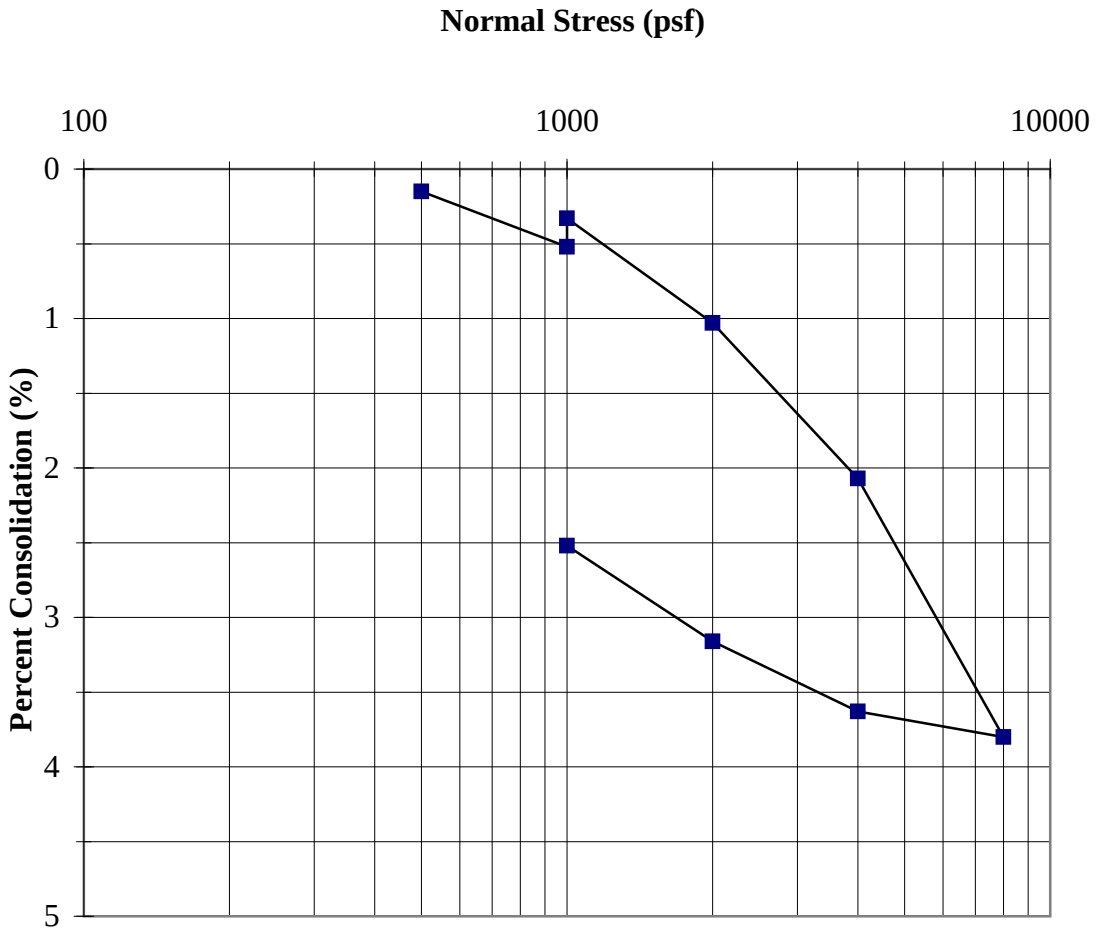


Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Remarks
■	B-1	R-2	10	CL	γ_d = 101.4 pcf, w/c = 24.3%, S = 99.9

SAS	CONSOLIDATION TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-7

CONSOLIDATION TEST RESULTS

ASTM D 2435 - 90

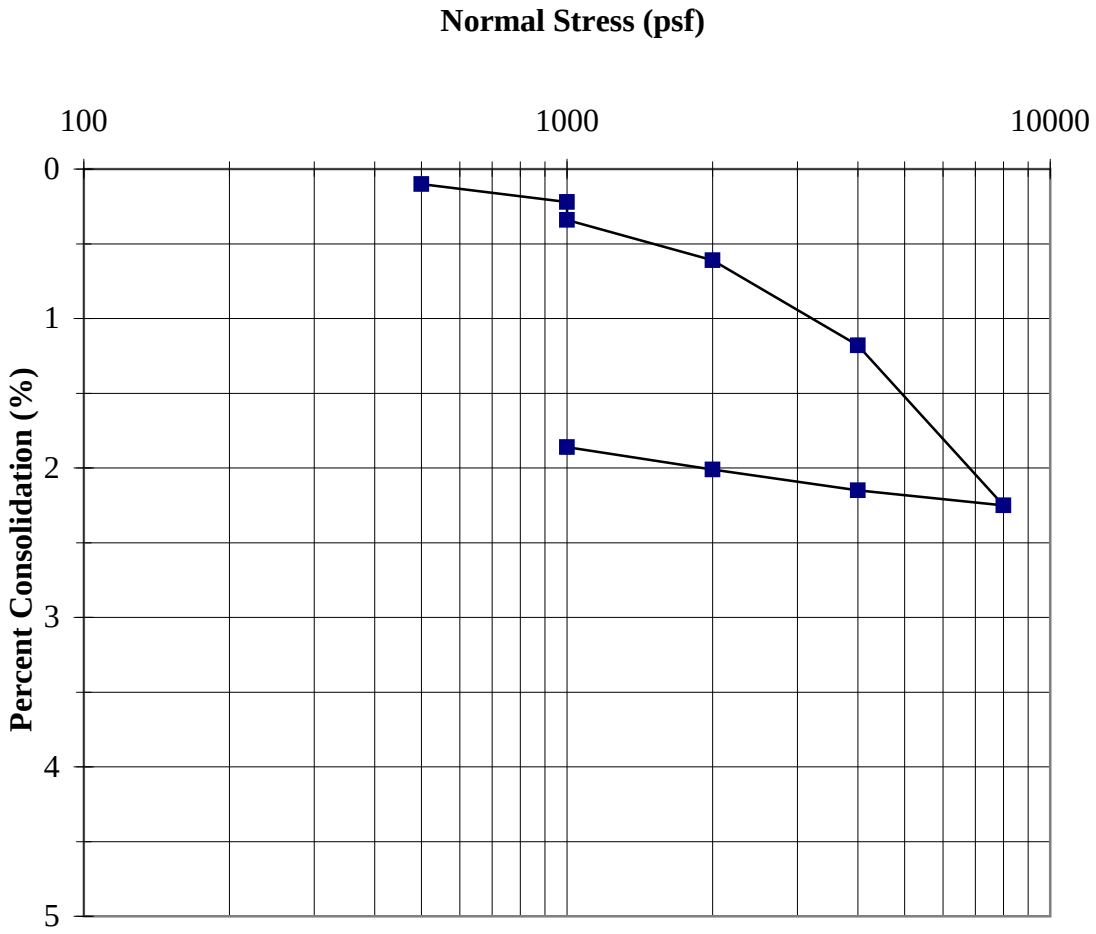


Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Remarks
■	B-2	R-3	15	CL	γ_d = 100.1 pcf, w/c = 24.8%, S = 99.7

SAS	CONSOLIDATION TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-6

CONSOLIDATION TEST RESULTS

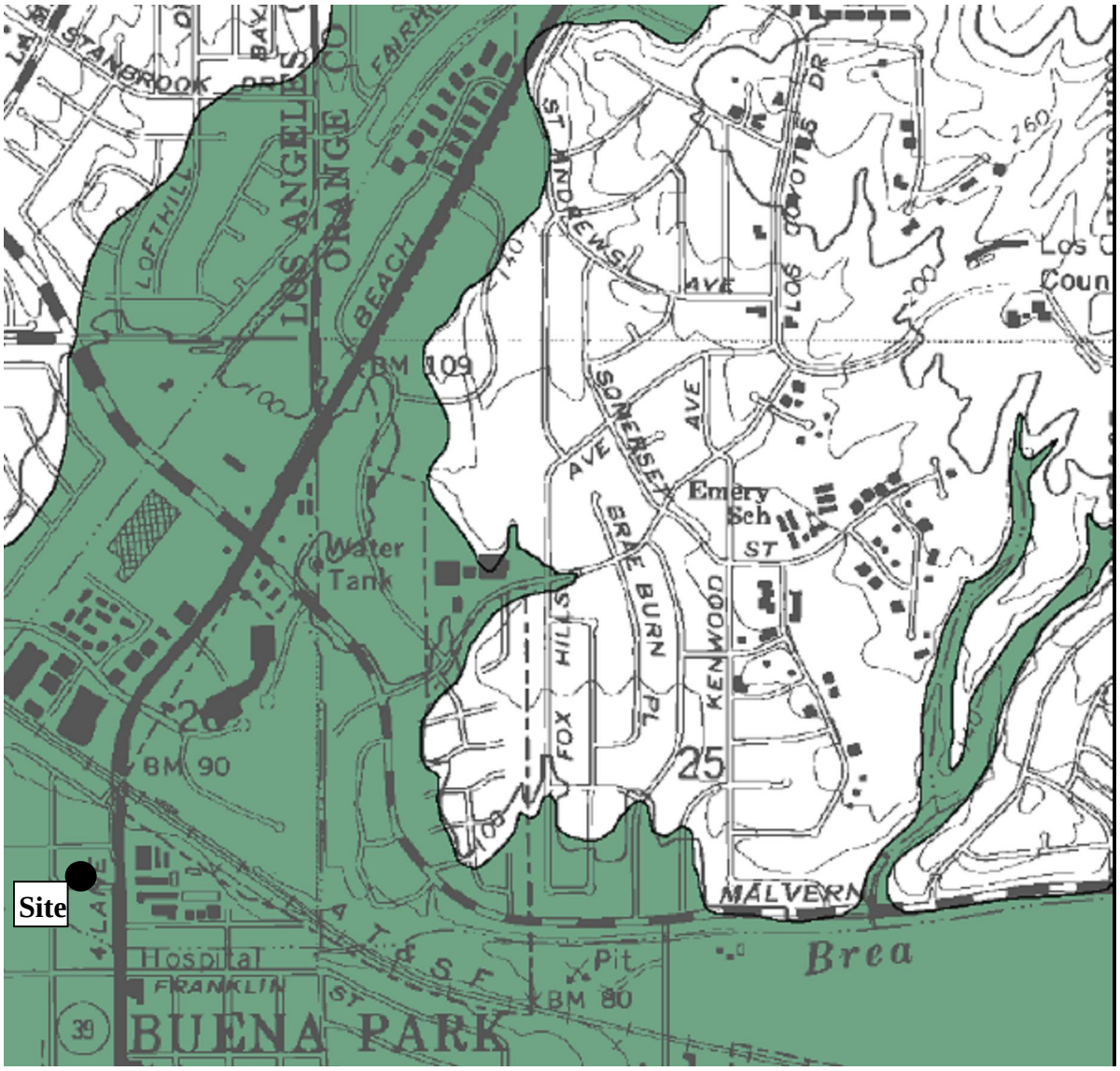
ASTM D 2435 - 90



Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Remarks
■	B-2	R-4	20	SM	γ_d = 101.7 pcf, w/c = 23.2%, S = 99.9

SAS	CONSOLIDATION TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-7

APPENDIX C



STATE OF CALIFORNIA

SEISMIC HAZARD ZONES

Delineated in compliance with
Chapter 7.8, Division 2 of the California Public Resources Code
(Seismic Hazards Mapping Act)

LA HABRA QUADRANGLE

OFFICIAL MAP
Released: April 15, 1998

MAP EXPLANATION

Zones of Required Investigation:

Liquefaction
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

SAS	CALIFORNIA SEISMIC HAZARD ZONES MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE C-1



MAP EXPLANATION

STATE OF CALIFORNIA

SPECIAL STUDIES ZONES

Delineated in compliance with
Chapter 7.5, Division 2 of the California Public Resources Code
(Alquist-Priolo Special Studies Zones Act)

LA HABRA QUADRANGLE

REVISED OFFICIAL MAP

Effective: November 1, 1991

Potentially Active Faults

106 C — Faults considered to have been active during Quaternary time; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep.

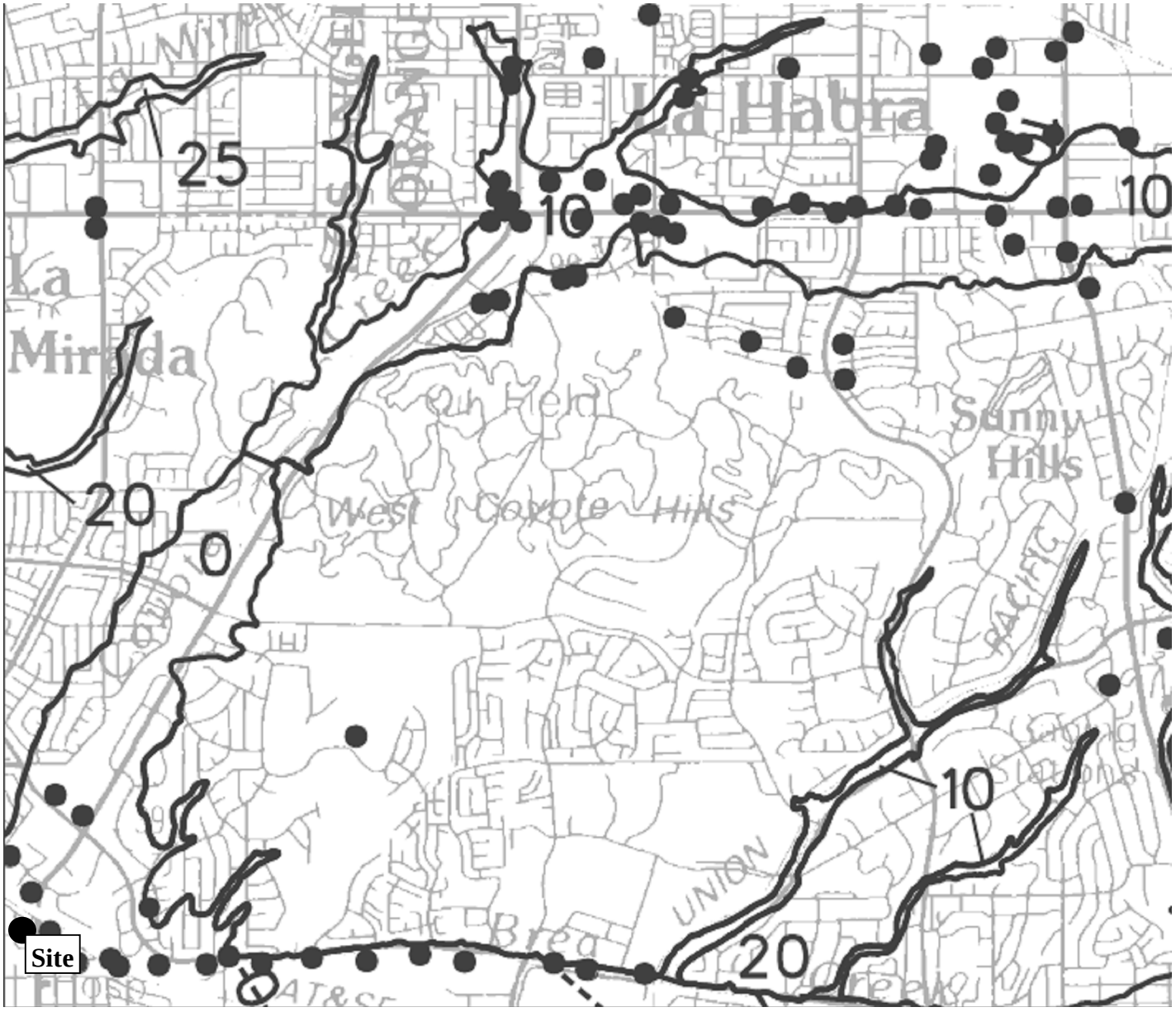
Aerial photo lineaments (not field checked); based on youthful geomorphic and other features believed to be the results of Quaternary faulting.

Special Studies Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define special studies zone segments.

Seaward projection of zone boundary.

SAS	CALIFORNIA SPECIAL STUDIES ZONES MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE C-2



● Borehole Site

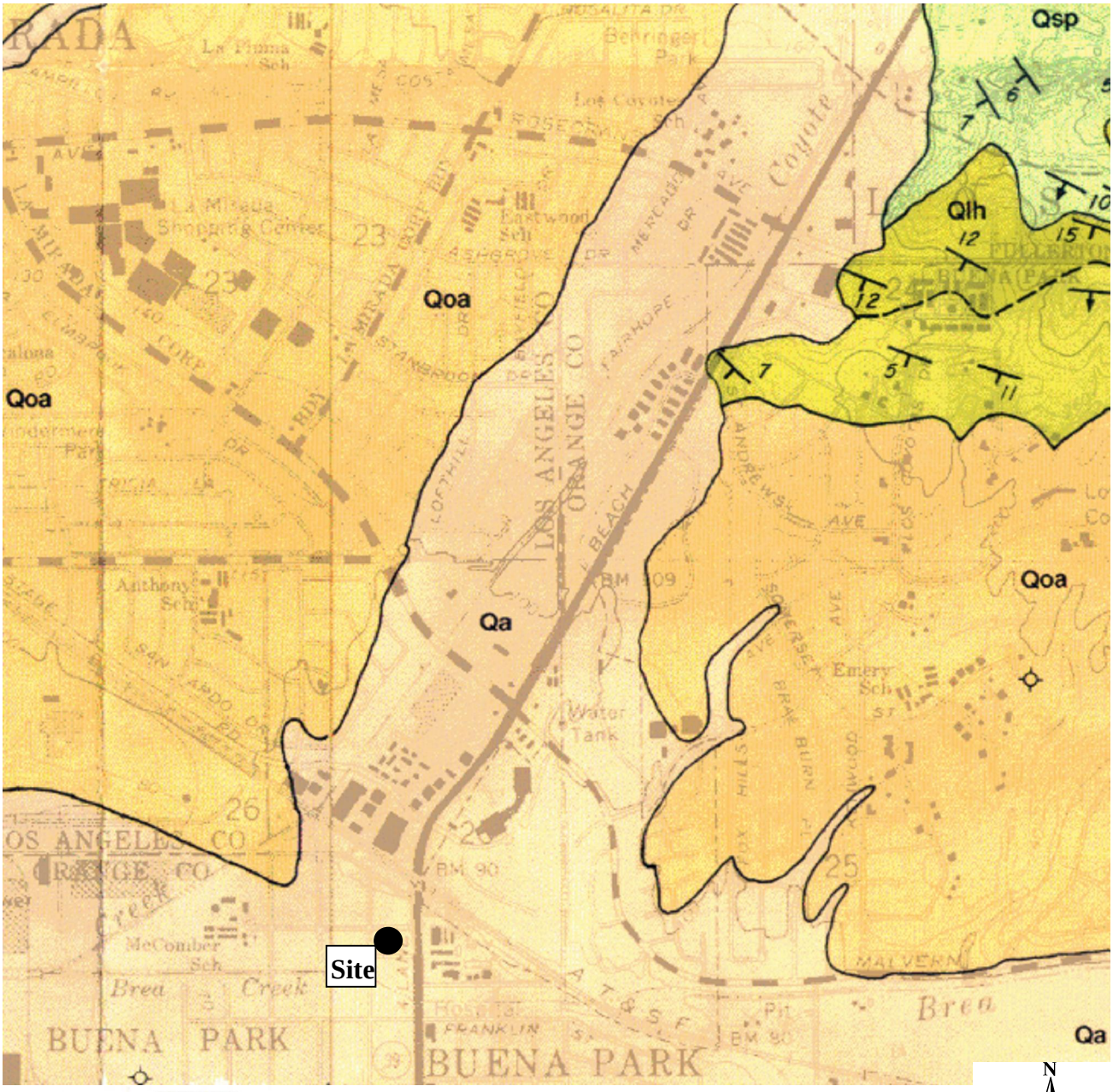
30 Depth to ground water in feet

X Site of historical earthquake–generated liquefaction. See "Areas of Past Liquefaction" discussion in text.

Department of Conservation, Division of Mines And Geology
Seismic Hazard Zone Report For The La Habra 7.5-Minute Quadrangle,
Los Angeles and Orange Counties, California, 1997, SHZR 09

SAS	HISTORICALLY HIGHEST GROUND WATER LEVELS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE C-3

APPENDIX D



af
Qg
Qa

SURFICIAL SEDIMENTS
undissected alluvial deposits
af *artificial fill, some recent areas may not be shown*
Qg *gravel and sand of major stream channels*
Qa *alluvial gravel, sand and silt of valleys and floodplains*

Dibblee, T.W., Jr., Dibblee Geological Foundation, Geologic Map of Whittier and La Habra Quadrangles, 2001, Map # DF-74

SAS	GEOLOGIC MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE D-1

APPENDIX E

LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	August 8, 2019	Bore Hole:	B-1	Sampler Type:	S	Standard Penetration Test
Address:	7682 -7712 Craig Avenue Buena Park	Distance From Fault (km):	11.41	Sampling Method:	L	With Liners
		Earthquake Magnitude:	7.3	Hammer Type:	A	Automatic
SAS File:	9SMO183	Peak Ground Acceleration:	0.731	Borehole Diam:	115	mm
		Maximum Acceleration:	0.731			
		Depth of Ground Water (ft):	42			
		Historic Water Level (ft):	1			

Calculated Depth		Unit Weight	Total Stress	Effective Stress	Sampler Type	Percent Fines	Field Blows	Correction Factors						Corctd Blows	Cln Snd Eq Blows	Magntd Scaling	Liquefaction Stress Ratio		Hist. Wtr. Effective Stress	Rd	Induced Stress	Safety Factor
								Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type									
		γ	σ	σ'			N							$N_{1\text{-}60}$	$N_{1\text{-}60CS}$		M=7.5	M=7.3	σ'_{HIST}		Ratio	
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	C_N	C_E	C_B	C_R	C_S	C_{SPT}	(B/ft)	(B/ft)				(psf)			
2.5		120.0	300.0	300	S	71.9	16	1.70	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	206	0.996	0.688	NL
7.5		120.0	900	900	S	83.1	17	1.49	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	494	0.988	0.855	NL
12.5		120.0	1500	1500	S	89.5	14	1.15	1.20	1.00	0.85	1.0	1.00	16	24	1.10	0.277	0.303	782	0.979	0.892	0.34
17.5		120.0	2100	2100	S	36.6	21	0.98	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1070	0.967	0.902	NL
22.5		120.0	2700	2700	S	49.8	23	0.86	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1358	0.952	0.899	NL
27.5		120.0	3300	3300	S	55.7	27	0.78	1.20	1.00	0.95	1.0	1.00	24	34	1.10	5.246	5.749	1646	0.933	0.888	NL
32.5		120.0	3900	3900	S	43.1	33	0.72	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	1934	0.909	0.870	NL
37.5		120.0	4500	4500	S	61.5	21	0.67	1.20	1.00	1.00	1.0	1.00	17	25	1.10	0.300	0.329	2222	0.878	0.845	0.39
42.5	*	120.0	5100	5069	S	50.3	77	0.63	1.20	1.00	1.00	1.0	1.00	58	75	1.10	0.523	0.573	2510	0.841	0.812	NL
47.5	*	120.0	5700	5357	S	66.1	47	0.61	1.20	1.00	1.00	1.0	1.00	34	46	1.10	0.250	0.274	2798	0.796	0.771	NL
50.0	*	120.0	6000	5501	S	8	51	0.60	1.20	1.00	1.00	1.0	1.00	37	38	1.10	0.009	0.010	2942	0.771	0.747	NL

* - Sampled Below Ground Water Level

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183L3.xls

SAS	LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-1) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE E-1

LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	August 8, 2019	Bore Hole:	B-2	Sampler Type:	S	Standard Penetration Test
Address:	7682 -7712 Craig Avenue Buena Park	Distance From Fault (km):	11.41	Sampling Method:	L	With Liners
		Earthquake Magnitude:	7.3	Hammer Type:	A	Automatic
SAS File:	9SMO183	Peak Ground Acceleration:	0.731	Borehole Diam:	115	mm
		Maximum Acceleration:	0.731			
		Depth of Ground Water (ft):	42			
		Historic Water Level (ft):	1			

Calculated Depth		Unit Weight	Total Stress	Effective Stress	Sampler Type	Percent Fines	Field Blows	Correction Factors						Corctd Blows	Cln Snd Eq Blows	Magntd Scaling	Liquefaction Stress Ratio		Hist. Wtr. Effective Stress	Rd	Induced Stress	Safety Factor
								Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type									
		γ	σ	σ'			N							$N_{1\text{-}60}$	$N_{1\text{-}60CS}$		M=7.5	M=7.3	σ'_{HIST}		Ratio	
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	C_N	C_E	C_B	C_R	C_S	C_{SPT}	(B/ft)	(B/ft)				(psf)			
2.5		120.0	300.0	300	S	69.3	15	1.70	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	206	0.996	0.688	NL
7.5		120.0	900	900	S	87.3	18	1.49	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	494	0.988	0.855	NL
12.5		120.0	1500	1500	S	93.4	20	1.15	1.20	1.00	0.85	1.0	1.00	24	34	1.10	5.246	5.749	782	0.979	0.892	NL
17.5		120.0	2100	2100	S	6.6	19	0.98	1.20	1.00	0.95	1.0	1.00	21	21	1.10	0.231	0.253	1070	0.967	0.902	0.28
22.5		120.0	2700	2700	S	31	31	0.86	1.20	1.00	0.95	1.0	1.00	30	40	1.10	0.112	0.123	1358	0.952	0.899	NL
27.5		120.0	3300	3300	S	4.9	37	0.78	1.20	1.00	0.95	1.0	1.00	33	33	1.10	1.240	1.359	1646	0.933	0.888	NL
32.5		120.0	3900	3900	S	57.7	28	0.72	1.20	1.00	1.00	1.0	1.00	24	34	1.10	5.246	5.749	1934	0.909	0.870	NL
37.5		120.0	4500	4500	S	32.1	27	0.67	1.20	1.00	1.00	1.0	1.00	22	31	1.10	0.518	0.567	2222	0.878	0.845	NL
42.5	*	120.0	5100	5069	S	36.9	15	0.63	1.20	1.00	1.00	1.0	1.00	11	18	1.10	0.194	0.213	2510	0.841	0.812	0.26
47.5	*	120.0	5700	5357	S	52.5	29	0.61	1.20	1.00	1.00	1.0	1.00	21	30	1.10	0.482	0.529	2798	0.796	0.771	NL
50.0	*	120.0	6000	5501	S	36.6	39	0.60	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	2942	0.771	0.747	NL

* - Sampled Below Ground Water Level

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183L4.xls

SAS	LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-2) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE E-2

BORE HOLE B-1

Sample No.	Depth of Sampling (ft)	Fines Passing #200 Sieve (%)
1	2.5	71.9
2	7.5	83.1
3	12.5	89.5
4	17.5	36.6
5	22.5	49.8
6	27.5	55.7
7	32.5	43.1
8	37.5	61.5
9	42.5	50.3
10	47.5	66.1
11	50	8.0

BORE HOLE B-2

Sample No.	Depth of Sampling (ft)	Fines Passing #200 Sieve (%)
1	2.5	69.3
2	7.5	87.3
3	12.5	93.4
4	17.5	6.6
5	22.5	31.0
6	27.5	4.9
7	32.5	57.7
8	37.5	32.1
9	42.5	36.9
10	47.5	52.5
11	50	36.6

APPENDIX F

SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	September 19, 2019	Bore Hole:	B-1				
Address:	7682 -7712 Craig Avenue	Distance From Fault (km):	11.41	Sampler Type:	S	Standard Penetration Test	
	Buena Park	Earthquake Magnitude:	7.3	Sampling Method:	L	With Liners	
SAS File:	9SMO183	Peak Ground Acceleration:	0.731	Hammer Type:	A	Automatic	
		Maximum Acceleration:	0.731	Borehole Diam:	115	mm	
		Depth of Ground Water (ft):	42				
		Historic Water Level (ft):	1				

Calculated Depth		Unit Weight γ	Total Stress σ	Effective Stress σ'	Sampler Type	Percent Fines	Field Blows N	Correction Factors: Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type	Corctd Blows $N_{1\text{-}60}$	Cln Snd Eq Blows $N_{1\text{-}60CS}$	Magntd Scaling Factor	Liquefaction Stress Ratio M=7.5	M=7.3	Hist. Wtr. Effective Stress σ'_{HIST}	Rd	Induced Stress Ratio	Safety Factor	Vlmtrc Strain	Stlmnt per Layer
								CN	CE	CB	CR	CS	C_{SPT}											
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)							(B/ft)	(B/ft)				(psf)				(%)	(in)
2.5		120.0	300	300	S	71.9	16	1.70	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	206	0.996	0.688	NL	0.00	0.00
7.5		120.0	900	900	S	83.1	17	1.49	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	494	0.988	0.855	NL	0.00	0.00
12.5		120.0	1500	1500	S	89.5	14	1.15	1.20	1.00	0.85	1.0	1.00	16	24	1.10	0.277	0.303	782	0.979	0.892	0.34	1.10	0.66
17.5		120.0	2100	2100	S	36.6	21	0.98	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1070	0.967	0.902	NL	0.00	0.00
22.5		120.0	2700	2700	S	49.8	23	0.86	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1358	0.952	0.899	NL	0.00	0.00
27.5		120.0	3300	3300	S	55.7	27	0.78	1.20	1.00	0.95	1.0	1.00	24	34	1.10	5.246	5.749	1646	0.933	0.888	NL	0.00	0.00
32.5		120.0	3900	3900	S	43.1	33	0.72	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	1934	0.909	0.870	NL	0.00	0.00
37.5		120.0	4500	4500	S	61.5	21	0.67	1.20	1.00	1.00	1.0	1.00	17	25	1.10	0.300	0.329	2222	0.878	0.845	0.39	1.07	0.64
42.5	*	120.0	5100	5069	S	50.3	77	0.63	1.20	1.00	1.00	1.0	1.00	58	75	1.10	0.523	0.573	2510	0.841	0.812	NL	0.00	0.00
47.5	*	120.0	5700	5357	S	66.1	47	0.61	1.20	1.00	1.00	1.0	1.00	34	46	1.10	0.250	0.274	2798	0.796	0.771	NL	0.00	0.00
50.0	*	120.0	6000	5501	S	8	51	0.60	1.20	1.00	1.00	1.0	1.00	37	38	1.10	0.009	0.010	2942	0.771	0.747	NL	0.00	0.00

* - Sampled Below Ground Water Level

Total Settlement 1.30

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183S3.xls

SAS	SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-1) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE F-1

SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	September 19, 2019	Bore Hole:	B-2				
Address:	7682 -7712 Craig Avenue	Distance From Fault (km):	11.41	Sampler Type:	S	Standard Penetration Test	
	Buena Park	Earthquake Magnitude:	7.3	Sampling Method:	L	With Liners	
SAS File:	9SMO183	Peak Ground Acceleration:	0.731	Hammer Type:	A	Automatic	
		Maximum Acceleration:	0.731	Borehole Diam:	115	mm	
		Depth of Ground Water (ft):	42				
		Historic Water Level (ft):	1				

Calculated Depth		Unit Weight γ	Total Stress σ	Effective Stress σ'	Sampler Type	Percent Fines	Field Blows N	Correction Factors: Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type	Corctd Blows $N_{1\text{-}60}$	Cln Snd Eq Blows $N_{1\text{-}60CS}$	Magntd Scaling Factor	Liquefaction Stress Ratio M=7.5	M=7.3	Hist. Wtr. Effective Stress σ'_{HIST}	Rd	Induced Stress Ratio	Safety Factor	Vlmtrc Strain	Stlmnt per Layer
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	CN	CE	CB	CR	CS	C_{SPT}	(B/ft)	(B/ft)				(psf)				(%)	(in)
2.5		120.0	300	300	S	69.3	15	1.70	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	206	0.996	0.688	NL	0.00	0.00
7.5		120.0	900	900	S	87.3	18	1.49	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	494	0.988	0.855	NL	0.00	0.00
12.5		120.0	1500	1500	S	93.4	20	1.15	1.20	1.00	0.85	1.0	1.00	24	34	1.10	5.246	5.749	782	0.979	0.892	NL	0.00	0.00
17.5		120.0	2100	2100	S	6.6	19	0.98	1.20	1.00	0.95	1.0	1.00	21	21	1.10	0.231	0.253	1070	0.967	0.902	0.28	1.22	0.73
22.5		120.0	2700	2700	S	31	31	0.86	1.20	1.00	0.95	1.0	1.00	30	40	1.10	0.112	0.123	1358	0.952	0.899	NL	0.00	0.00
27.5		120.0	3300	3300	S	4.9	37	0.78	1.20	1.00	0.95	1.0	1.00	33	33	1.10	1.240	1.359	1646	0.933	0.888	NL	0.00	0.00
32.5		120.0	3900	3900	S	57.7	28	0.72	1.20	1.00	1.00	1.0	1.00	24	34	1.10	5.246	5.749	1934	0.909	0.870	NL	0.00	0.00
37.5		120.0	4500	4500	S	32.1	27	0.67	1.20	1.00	1.00	1.0	1.00	22	31	1.10	0.518	0.567	2222	0.878	0.845	NL	0.00	0.00
42.5	*	120.0	5100	5069	S	36.9	15	0.63	1.20	1.00	1.00	1.0	1.00	11	18	1.10	0.194	0.213	2510	0.841	0.812	0.26	1.48	0.89
47.5	*	120.0	5700	5357	S	52.5	29	0.61	1.20	1.00	1.00	1.0	1.00	21	30	1.10	0.482	0.529	2798	0.796	0.771	NL	0.00	0.00
50.0	*	120.0	6000	5501	S	36.6	39	0.60	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	2942	0.771	0.747	NL	0.00	0.00

* - Sampled Below Ground Water Level

Total Settlement 1.62

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

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SAS	SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-2) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE F-2

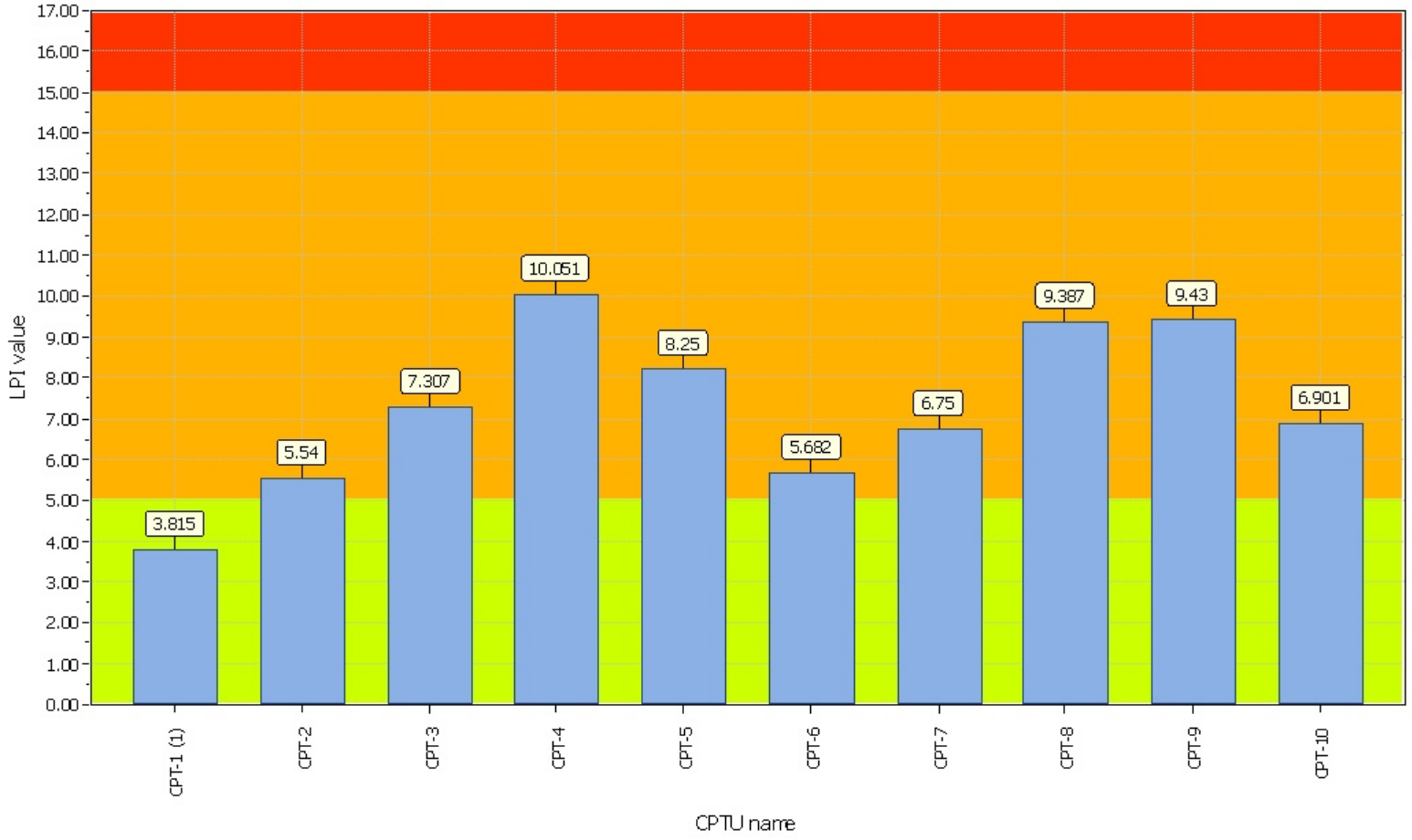
APPENDIX G

SASSAN Geosciences, Inc
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869
sasgeoinc@aol.com

Project title : Liquefaction Study

Location : 7682 -7712 Craig Avenue, Buena Park

Overall Liquefaction Potential Index report



LPI color scheme

- Very high risk
- High risk
- Low risk

Basic statistics

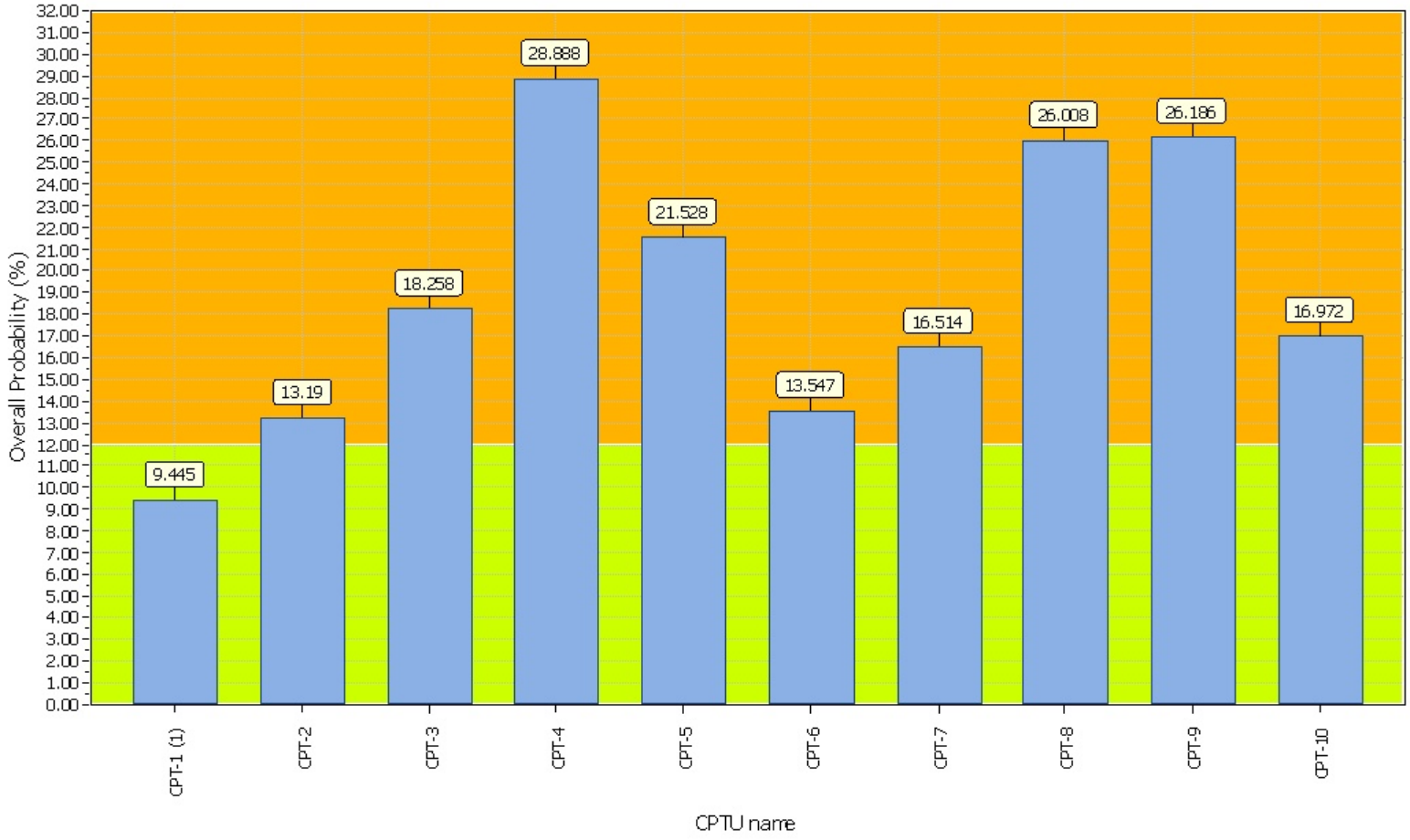
Total CPT number: 10
10.00% low risk
90.00% high risk
0.00% very high risk

SASSAN Geosciences, Inc
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869
sasgeoinc@aol.com

Project title : Liquefaction Study

Location : 7682 -7712 Craig Avenue, Buena Park

Overall Probability for Liquefaction report



Probability color scheme

- Very High Probability
- High Probability
- Low Probability

Basic statistics

Total CPT number: 10
10.00% low probability
90.00% high probability
0.00% very high probability

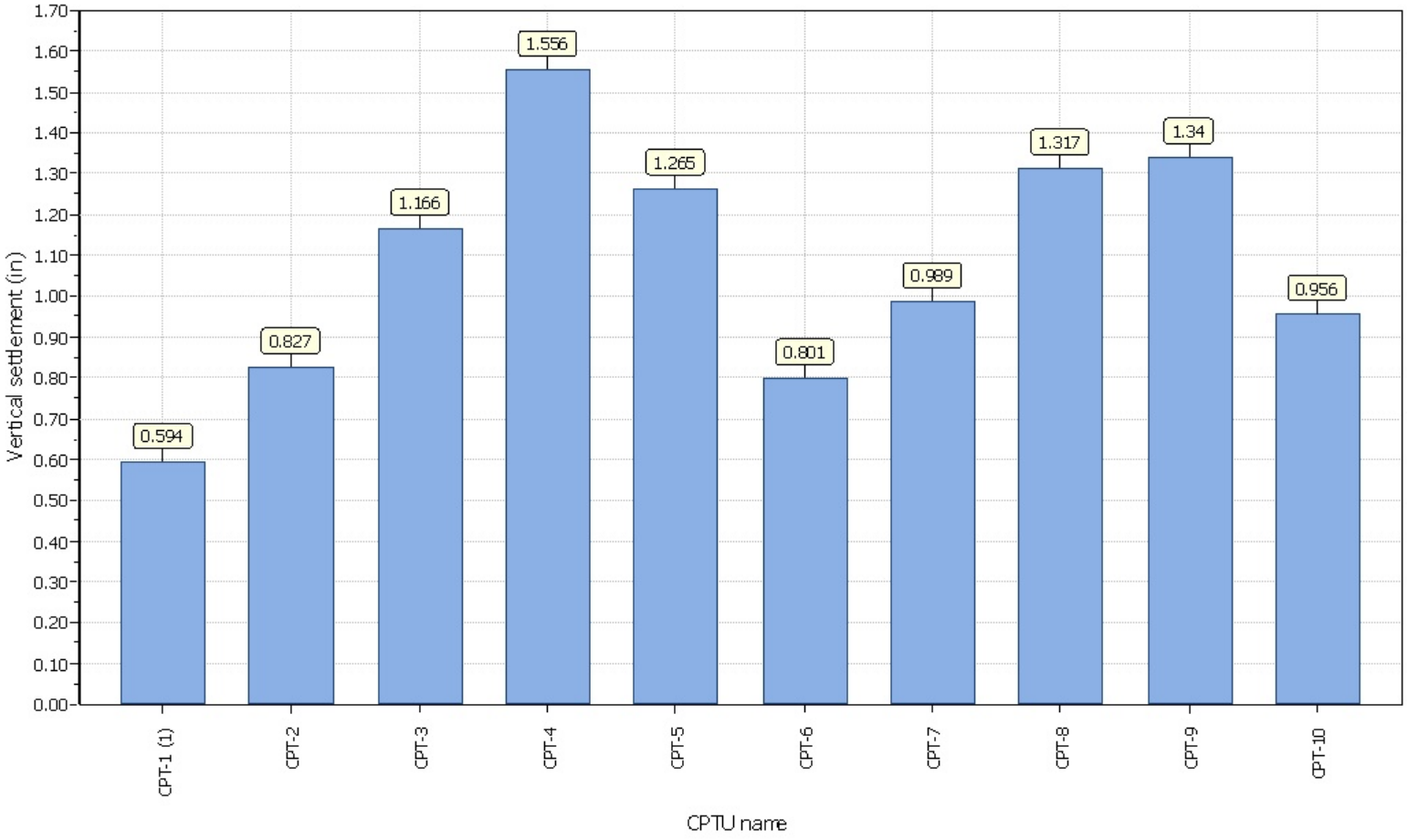
APPENDIX H

SASSAN Geosciences, Inc
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869
sasgeoinc@aol.com

Project title : Liquefaction Study

Location : 7682 -7712 Craig Avenue, Buena Park

Overall vertical settlements report



APPENDIX I

CONSOLIDATION SETTLEMENT CALCULATION
UNDER CONTINUOUS FOOTINGS
(WITH GROUND WATER)

Linear weight on footing, **W** =	25,000	plf
Width of footing, **B** =	25.0	ft
Applied pressure from load, **P** =	1,000	psf
Depth of footing, **D** =	2.0	ft
Depth of watertable, dw =	2.5	ft

Strata Data:

Layer No.	γ_d Dry Unit Weight (pcf)	ω_c Moisture Content (%)	d Depth of Sampling (ft)	H Thickness of Layer (ft)	Percent Consolid. (%)
1	105	13	5	7.5	0.736556
2	101	20	10	5	0.573914
3	100	18	15	5	0.537281
4	102	7	20	5	0.168321
5	0	0	0	0	
6	0	0	0	0	

Settlement Calculations:

Layer No.	γ_t/γ_b Density of Layer (pcf)	Z Center of Layer (ft)	α Angle (rad)	P_0' Normal Stress (psf)	Δp Applied Pressure (psf)	ΔH Settlement in Layer (in)
1	119	4.75	2.708	564	995.7	0.044
	56	5	2.671	437	994.5	0.442
2	59	10	2.003	725	926.6	0.344
3	56	15	1.532	1,011	805.6	0.322
4	47	20	1.214	1,267	684.7	0.101
5						
6						

Total Settlement D**H** = 1.254 in

SAS	CONSOLIDATION SETTLEMENT CALCULATION 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE I-1

CONSOLIDATION SETTLEMENT CALCULATION
UNDER CONTINUOUS FOOTINGS
(WITH GROUND WATER)

Linear weight on footing, **W** =	22,500	plf
Width of footing, **B** =	15.0	ft
Applied pressure from load, **P** =	1,500	psf
Depth of footing, **D** =	2.0	ft
Depth of watertable, dw =	2.5	ft

Strata Data:

Layer No.	γ_d Dry Unit Weight (pcf)	ω_c Moisture Content (%)	d Depth of Sampling (ft)	H Thickness of Layer (ft)	Percent Consolid. (%)
1	105	13	5	7.5	0.988251
2	101	20	10	5	0.689327
3	100	18	15	5	0.473504
4	102	7	20	5	0.252096
5	0	0	0	0	
6	0	0	0	0	

Settlement Calculations:

Layer No.	γ_t/γ_b Density of Layer (pcf)	Z Center of Layer (ft)	α Angle (rad)	P_0' Normal Stress (psf)	Δp Applied Pressure (psf)	ΔH Settlement in Layer (in)
1	119	4.75	2.439	564	1473.0	0.059
	56	5	2.381	437	1465.9	0.593
2	59	10	1.506	725	1195.7	0.414
3	56	15	1.047	1,011	913.0	0.284
4	47	20	0.790	1,267	716.0	0.151
5						
6						

Total Settlement D**H** = 1.501 in

W - Linear Weight on Footing (plf)

P - Applied Pressure (psf)

B - Width of Footing (ft)

D - Depth of Footing (ft)

H - Height of Layer (ft)

Z - Distance from Surface to Center of Layer (ft)

ΔH - Settlement of Soil (in)

α - Angle Between Center of Layer and Edges of Footing (radians)

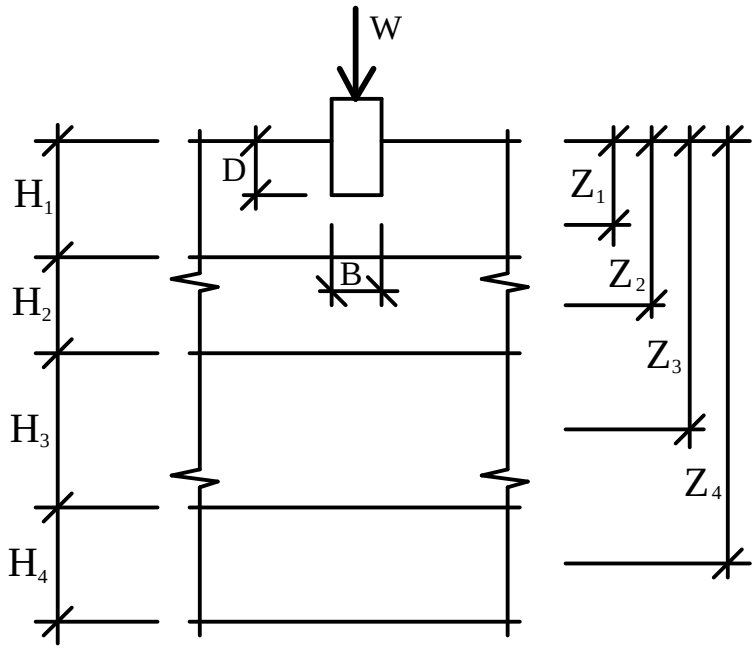
γ_d - Dry Density (pcf)

γ_t - Total Density (pcf)

ω_c - Field Moisture Content (%)

P_0' - Effective Normal Stress (psf)

Δp - Applied Pressure (change) (psf)



SAS	SYMBOL DESIGNATION 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE I-3

APPENDIX J

ALLOWABLE BEARING VALUE

Reference: DEPARTMENT OF THE NAVY,
NAVAL FACILITIES ENGINEERING COMMAND,
DESIGN MANUAL 7.2, page 131

PROPERTIES:

Wet Density (g)	=	126	pcf
Cohesion (**C**)	=	190	psf
Angle of Friction (f)	=	32	degrees
Footing Depth (**D**)	=	2.0	feet
Footing Width (**B**)	=	25	feet
Footing Length (**L**)	=	180	feet
Factor of Safety (**F.S**.)	=	3	

CALCULATIONS - ULTIMATE BEARING CAPACITY

N_c = 38.0 **N_q** = 24.0 **N_g** = 24.2

Square Footing:

Qu = $CN_c(1+0.3B/L)+gDN_q+0.4gBN_g$ =

= 190 x 38 (1 +0.3 x 25 / 180)+ 126 x 2 x 24 +

+0.4x 126 x 25 x 24.2 = 44057

Allowable Bearing Capacity for Square Footing

Qall =Qu / F.S. = 44057 / 3 = 14686

Continuous Footing:

Qu = $CN_c+gDN_q+0.5gBN_g$ =

= 190 x 38 + 126 x 2 x 24 + 0.5 x 126 x 25 x 24.2 =

= 51375

Allowable Bearing Capacity for Continuous Footing

Qall =Qu / F.S. = 51375 / 3 = 17125

ALLOWABLE BEARING VALUE

Reference: DEPARTMENT OF THE NAVY,
NAVAL FACILITIES ENGINEERING COMMAND,
DESIGN MANUAL 7.2, page 131

PROPERTIES:

Wet Density (g)	=	121	pcf
Cohesion (**C**)	=	480	psf
Angle of Friction (f)	=	21	degrees
Footing Depth (**D**)	=	2.0	feet
Footing Width (**B**)	=	25	feet
Footing Length (**L**)	=	180	feet
Factor of Safety (**F.S**.)	=	3	

CALCULATIONS - ULTIMATE BEARING CAPACITY

N_c = 15.1 **N_q** = 7.0 **N_g** = 3.4

Square Footing:

$Q_u = CN_c(1+0.3B/L)+gDN_q+0.4gBN_g$ =

= 480 x 15.1 (1 +0.3 x 25 / 180)+ 121 x 2 x 7.01 +

+0.4x 121 x 25 x 3.4 = 13382

Allowable Bearing Capacity for Square Footing

Q_{all} =Q_u / F.S. = 13382 / 3 = 4461

Continuous Footing:

$Q_u = CN_c+gDN_q+0.5gBN_g$ =

= 480 x 15.1 + 121 x 2 x 7.01 + 0.5 x 121 x 25 x 3.4 =

= 14106

Allowable Bearing Capacity for Continuous Footing

Q_{all} =Q_u / F.S. = 14106 / 3 = 4702

Appendix F

Noise Analysis

Kimley»Horn

MEMORANDUM

To: Ruben Salas, Kimley-Horn and Associates, Inc.

From: Elena Ajdari, Kimley-Horn and Associates, Inc.

Date: December 15, 2022

Subject: Craig Apartments Development – Noise Analysis

Purpose

The purpose of this memorandum is to identify the noise impacts associated with construction and operations of the proposed Craig Apartments Development Project ("project" or "proposed project"), located in the City of Buena Park, California.

Project Location

The project site is a vacant 0.69-acre lot located at 7682, 7692, 7712, and 7722 Craig Avenue, in the City of Buena Park, Orange County, California, Assessor Parcel Numbers (APNs) 066-132-09, -15, -16, and 17. The project site has been heavily disturbed, and no native habitat nor ornamental habitat occurs onsite. The project site is surrounded by single family residential dwelling units to the north and west, with Craig Avenue directly adjacent to the north, commercial uses to the east and southeast, and the Brea Creek to the south. The site is relatively flat.

Project Description

The proposed project involves the construction of 12 three-story townhouse-style apartments. The apartments would be divided between two buildings, each containing 6 apartments. The two buildings would be built in tandem with one building facing Craig Avenue and the second building behind building one. The project would total approximately 23,655-square-feet (SF) of building space and would include drive-in vehicle garages at ground level and two above ground floors of living space. The project would include perimeter landscaping and green space buffering the project from the single-family residential dwelling unit (DU) to the west. The project would include pedestrian walkways, visitor parking, and perimeter/security lighting. See Exhibit 1: Conceptual Site Plan for more details. The project site has an existing (Low Density Residential) General Plan land use designation and a Single Family Residential (RS-6) zoning district and requires a General Plan Amendment (GPA) and a Zone Change (ZC) to Medium Density Residential (RM-20).

Site Access

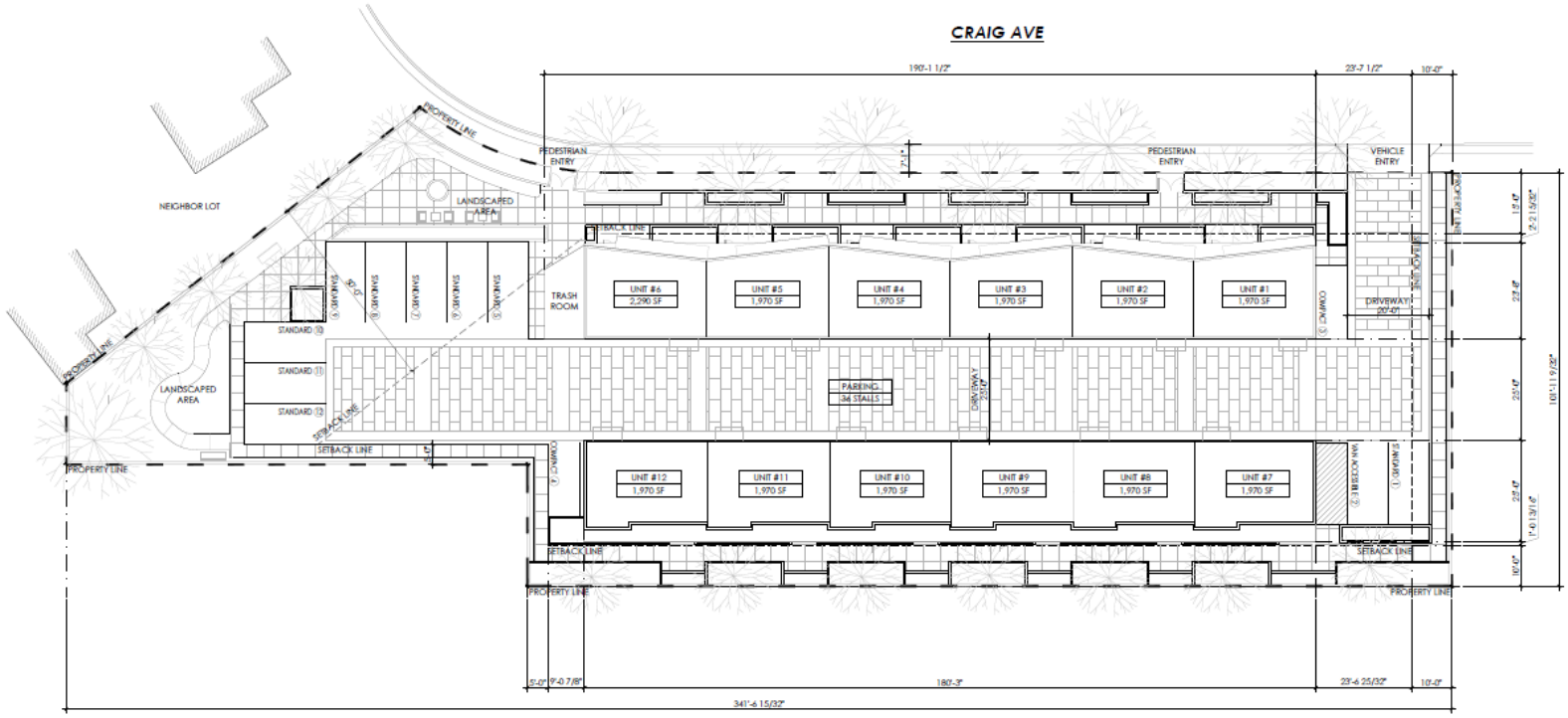
Regional access is provided on Interstate 5 (I-5) via the Beach Boulevard ramps. Local access is provided via Beach Boulevard (Highway 39) and Craig Avenue. Main project site vehicular access would be provided via one twenty-foot-wide paved driveway located on the northeast corner of the site on Craig Avenue.

Parking

The project would provide thirty-six automobile parking spaces. Twenty-four of the parking spaces would be indoor (garage) parking spaces and twelve would be outdoor (visitor) parking spaces. Outdoor parking spaces would be mainly consolidated along the western side of the site with the balance of the outdoor parking spaces throughout the site.

Kimley»Horn

Exhibit 1: Conceptual Site Plan



Noise Background

Sound is technically described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the physical intensity of the pressure vibrations that make up any sound. The pitch of the sound is related to the frequency of the pressure vibration. Since the human ear is not equally sensitive to a given sound level at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) provides this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Noise, on the other hand, is typically defined as unwanted sound. A typical noise environment consists of a base of steady ambient noise that is the sum of various distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from traffic on a major highway.

Several rating scales have been developed to analyze the adverse effect of community noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise 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. For example, the equivalent continuous sound level (L_{eq}) is the average acoustic energy content of noise for a stated period of time; thus, the L_{eq} of a time-varying noise and that of a steady noise are the same if they deliver the same acoustic energy to the ear during exposure. The Day-Night Sound level (L_{dn}) is 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 in the nighttime. The Community Noise Equivalent Level (CNEL) is 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. and an additional 5 dBA weighting during the hours of 7:00 p.m. to 10:00 p.m. to account for noise sensitivity in the evening and nighttime.

Regulatory Setting

City of Buena Park General Plan

The Noise Element of the City's General Plan contains noise and land use compatibility standards for various land uses throughout the City; refer to Table 1: Buena Park Noise and Land Use Compatibility. These standards and criteria are used in the land use planning process to reduce future noise and land use incompatibilities. The standards shown in Table 1 are the primary tool that allows the City to ensure integrated planning for compatibility between land uses and outdoor noise.

Table 1: Noise and Land Use Compatibility				
Land Use Category	**Community Noise Exposure (CNEL)**			
	Normally Acceptable	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential-Low Density, Single-Family, Duplex, Mobile Homes	50-60	55-70	70-75	75-85
Residential – Multiple Family	50-65	60-70	70-75	70-85
Transient Lodging – Motel, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	NA	50-70	NA	65-85
Sports Arenas, Outdoor Spectator Sports	NA	50-75	NA	70-85
Playgrounds, Neighborhood Parks	50-70	NA	67.5-77.5	72.5-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	NA	70-80	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	NA
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	75-85	NA
CNEL = community noise equivalent level; NA = not applicable. NORMALLY ACCEPTABLE: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. CONDITIONALLY ACCEPTABLE: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice. NORMALLY UNACCEPTABLE: New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise-insulation features must be included in the design. CLEARLY UNACCEPTABLE: New construction or development should generally not be undertaken.				
Source: City of Buena Park, *City of Buena Park General Plan*, Table N-2: Noise and Land Use Compatibility Matrix, December 2010.				

The City of Buena Park's construction and operational related noise restrictions are discussed below:

Construction Noise: The Noise Ordinance prohibits noise generated by construction activities between the hours of 8:00 PM and 7:00 AM Monday through Saturday, and at any time on Sundays. The Noise Ordinance does not include specific noise level limits for construction activities.

Operational Noise: Within the City of Buena Park, the Noise Ordinance governs operational noise generated between two properties and does not regulate noise from transportation sources, such as traffic, aircraft, and railways. Section 8.28.010 of the Noise Ordinance establishes the ordinance through the adoption of the Title 4, Division 6 of the Orange County Code. Section 4-6-5 and Section 4-6-6 of the Orange County Code sets exterior and interior level limits for residential properties, respectively. The Orange County Code does not set noise level limits for other land uses, such as commercial or industrial uses. The City-adopted exterior noise level limits between properties are presented in Table 2: City of Buena Park Exterior and Interior Noise Limits.

Table 2: City of Buena Park Exterior and Interior Noise Limits		
Land Use	**Noise Level (dBA) at Property Line**	**Time Period**
Exterior Noise Limits		
Residential	55	7:00 AM – 10:00 PM
	50	10:00 PM – 7:00 AM
Interior Noise Limits		
Residential	50	7:00 AM – 10:00 PM
	45	10:00 PM – 7:00 AM
Source: City of Buena Park, *City of Buena Park General Plan*, Table N-3: City of Buena Park Exterior and Interior Noise Limits, December 2010.		

Section 4-6-5 of the Orange County Code further restricts noise levels by 5 dBA when the "offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof". Section 4-6-5 states, in part:

> It shall be unlawful for any person…to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property…to exceed:
>
> 1) The noise standard for a cumulative period of more than thirty (30) minutes in any hour; or
> 2) The noise standard plus five (5) dB(A) for a cumulative period of more than fifteen (15) minutes in any hour; or
> 3) The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or
> 4) The noise standard plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or
> 5) The noise standard plus twenty (20) dB(A) for any period of time

Section 4-6-5(c) further allows correction to the noise level standard depending on the measured ambient noise levels. Section 4-6-6 sets forth interior noise levels limits for residential properties, which are shown in Table N-3. Section 4-6-6 states, in part:

> It shall be unlawful for any person…to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any residential property…to exceed:

1) The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or
2) The interior noise standard plus five (5) db(A) for a cumulative period of more than one (1) minute in any hour; or
3) The interior noise standard plus ten (10) db(A) for any period of time.

City of Buena Park Municipal Code

The Buena Park Municipal Code (BPMC), Chapter 8.28, establishes the following noise provisions relative to the project:

Section 8.28.040:

A. It is unlawful for any person to make or continue to make, or cause to be made or continued, within the city, any loud or unnecessary noise or any noise which may reasonably be anticipated to annoy, disturb, injure or endanger the comfort, repose, peace, health or safety of others, whether due to volume or duration, or both.

B. Without limitation as to the types of noise-producing acts which are in violation of this section, noise produced by the following acts are declared to be loud, disturbing and unnecessary noise in violation of this section:

4.a. Construction or Repair Activities. The performance of any construction or repair work of any kind upon, or excavating for, any building or structure, where any such work entails the use of any air compressor, jackhammer, power-driven drill, riveting machine, excavator, hand hammer on steel or iron, or any other machine, tool, device or equipment which makes loud noises to the disturbance of persons occupying sleeping quarters in a dwelling, hotel, or apartment or other place of residence. The above use of machinery or equipment that produces such unnecessary noise shall be prohibited on any Sunday or any other day between the hours of eight p.m. and seven a.m. The provisions of this section do not apply to any person who performs any construction, repair or excavation pursuant to the express written permission of the city engineer. Upon receipt of an application in writing therefor, stating the reasons for the request and the facts upon which such reasons are based, the city engineer may grant such permission if the activity is not otherwise prohibited by this code and he or she finds that:

i. The work proposed to be done is in the public interest, or

ii. Hardship, or injustice or unreasonable delay would result from the interruption thereof during the hours and days specified above, or

iii. The building or structure involved is devoted or intended to be devoted to a use immediately incidental to the public defense. Any person dissatisfied with the decision of the city engineer may forthwith appeal to the city manager by filing a written request for a hearing within seven calendar days of the city engineer's decision;

b. The provisions of this subsection do not apply to the construction, repair, or excavation during prohibited hours as may be necessary for the preservation of life or property when such necessity arises during such hours as the offices of the city are closed or where such necessity requires immediate action prior to the time at which it would be possible to obtain required permits; provided, that the persons doing such construction, repair or excavation obtain a permit therefor within one day after the office of the city engineer is first opened subsequent to the undertaking of such construction, repair or excavation;

5. Rubbish Collection. The performance of any rubbish collection utilizing any mechanical equipment in any residential zone or within five hundred feet of any residential zone between the hours of eight p.m. and six a.m.;

6. Use of weedblowers, powered lawnmowers and/or other powered landscape maintenance equipment between the hours of eight p.m. to eight a.m. on any day.

Vibration Standards:

The existing vibration environment, similar to that of the noise environment, is dominated by transportation-related vibration from roadways and rail lines in the City. Heavy truck traffic on local and regional roadway networks can generate ground-borne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, ground-borne vibration levels generated from vehicular traffic are not typically perceptible outside of the right-of-way for major roadways and smart streets with a large capacity of heavy vehicle traffic. Railroad operation and transit systems, such as freight trains and Metrolink operations, are an additional potentially substantial source of ground-borne vibration that occurs within the City.

Transportation and construction activities can generate varying degrees of ground-borne vibration, depending on the construction procedure and the construction equipment used. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics

of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, to slight damage at the highest levels. Ground-borne vibrations from construction activities rarely reach levels that damage structures.

The City does not have regulatory standards for construction or operational vibration sources. The Federal Transit Administration (FTA) and Caltrans have published guidelines for the analysis of ground-borne noise and vibration relating to transportation and construction-induced vibration. Caltrans guidelines recommend that a standard of 0.2 in/sec PPV not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures. With respect to human response within residential uses (i.e., annoyance), FTA recommends a maximum acceptable vibration standard of 80 VdB (the vibration velocity level in decibel scale).

Existing Environmental Setting

Mobile sources of noise, especially cars and trucks, are the most common and significant sources of noise in the City. Other sources of noise are the various land uses (i.e., residential, commercial, institutional, and recreational and parks activities) throughout the City that generate stationary-source noise. The existing mobile noise sources in the project area are generated by motor vehicles traveling on Beach Boulevard and Craig Avenue, as well as a railroad located approximately 650 feet to the northeast of the project site. The primary sources of stationary noise in the project vicinity are those associated with the surrounding commercial and residential uses. Such noise sources include idling vehicles, music playing, mechanical equipment (e.g., air conditioning equipment), dogs barking, and people talking and are typical of urban areas. The noise associated with these sources may represent a single-event noise occurrence or short-term noise.

Noise Impacts

Construction Noise

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 sensitive receptors near the construction site. Construction activities would include site preparation, grading, building construction, paving, and architectural coating. Such activities may require graders, dozers, and tractors during site preparation and grading; cranes, forklifts, generators, tractors, and welders during building construction; pavers, rollers, mixers, tractors, 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. Typical noise levels associated with individual construction equipment are listed in Table 3: Typical Construction Noise Levels.

Table 3: Typical Construction Noise Levels

Equipment	Typical Noise Level (dBA) at 50 feet from Source
Air Compressor	81
Backhoe	80
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Mobile	83
Dozer	85
Generator	82
Grader	85
Jack Hammer	88
Loader	80
Paver	85
Pneumatic Tool	85
Pump	77
Roller	85
Saw	76
Shovel	82
Truck	84

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

Following the methodology for quantitative construction noise assessments in the FTA's *Transit Noise and Vibration Impact Assessment Manual* (September 2018) (FTA Noise and Vibration Manual), the Federal Highway Administration (FHWA) Roadway Construction Noise Model (RCNM) was used to predict construction noise at the nearest receptors to the project's boundary (i.e., single-family residences located approximately 19 feet to the northwest, single-family residences located approximately 66 feet to the north, and multi-family residences located approximately 180 feet to the southwest of the project site). Table 4: Project Construction Noise Levels shows the estimated exterior construction noise levels at the nearest sensitive receptors.

Following FTA methodology, when calculating construction noise, all equipment is assumed to operate at the center of the project site while equipment would operate throughout the project site and not at a fixed location for extended periods of time. Therefore, the distances used in the RCNM model were 117 feet for single-family residences to the north, 175 feet for the single-family residences located to the northwest, and 270 feet for multi-family residences to the southwest. As shown in Table 4, the highest anticipated construction noise level of 79.9 dBA (during the building construction phase) would not exceed the FTA noise threshold of 80 dBA for residential uses. In addition, compliance with BPMC would further minimize impacts from construction noise, as construction would be limited to the hours of 7:00 a.m. to 8:00 p.m. Therefore, because project construction noise levels would not exceed FTA noise standards and construction activities would be required to comply with BPMC provisions, noise impacts would be less than significant. Although construction noise levels may exceed the existing ambient noise levels in the project area, construction would be temporary and would not result in a permanent increase in ambient noise levels.

Table 4: Project Construction Noise Levels

Construction Phase	Receptor Location			Worst Case Modeled Exterior Noise Level (dBA L_{eq})	Noise Threshold (dBA L_{eq})[2]	Exceeded?
	Land Use	Direction	Distance (feet)[1]			
Site Preparation	Single-family Residences	North	117	76.2	80	No
	Single-family Residences	Northwest	175	72.7	80	No
	Multi-family Residences	Southwest	270	68.9	80	No
Grading	Single-family Residences	North	117	77.2	80	No
	Single-family Residences	Northwest	175	73.7	80	No
	Multi-family Residences	Southwest	270	69.9	80	No
Building Construction	Single-family Residences	North	117	79.9	80	No
	Single-family Residences	Northwest	175	76.4	80	No
	Multi-family Residences	Southwest	270	72.6	80	No
Paving	Single-family Residences	North	117	76.2	80	No
	Single-family Residences	Northwest	175	72.7	80	No
	Multi-family Residences	Southwest	270	68.9	80	No
Architectural Coating	Single-family Residences	North	117	66.3	80	No
	Single-family Residences	Northwest	175	62.8	80	No
	Multi-family Residences	Southwest	270	59.0	80	No

Notes:

Table 4: Project Construction Noise Levels						
Construction Phase	Receptor Location			Worst Case Modeled Exterior Noise Level (dBA L_{eq})	Noise Threshold (dBA L_{eq})[2]	Exceeded?
	Land Use	Direction	Distance (feet)[1]			
1. Per the methodology described in the FTA Noise and Vibration Manual (September 2018), distances are measured from the nearest receptors to the center of the project construction site. 2. The City does not have a quantitative noise threshold for construction. Therefore, the construction noise thresholds from the FTA Noise and Vibration Manual (September 2018) are conservatively used for this analysis.						
Source: Federal Highway Administration, *Roadway Construction Noise Model,* 2006. Refer to Appendix A: RCNM Modeling Results for noise modeling results.						

Operational Noise

The project site is currently vacant. Implementation of the proposed project would create new sources of noise in the project vicinity. The primary noise sources associated with the project that could potentially impact nearby sensitive uses include mechanical equipment (e.g., air conditioners, etc.), typical stationary noise from residential uses (e.g., dogs barking, use of landscape equipment, people talking, etc.), and off-site traffic noise.

Mechanical Equipment

Mechanical equipment (e.g., heating, ventilation, and air conditioning [HVAC] equipment) typically generates noise levels of approximately 52 dBA at 50 feet.[1] Sound levels decrease by 6 dBA for each doubling of distance from the source.[2] The nearest sensitive receptors (single-family residences to the northwest) would be located as close as 85 feet from the HVAC equipment at the project site. At this distance, mechanical equipment noise levels would be approximately 47.4 dBA and would not exceed the City's 50 dBA exterior noise nighttime standard set forth in the Noise Element of the Buena Park General Plan for residential uses. Therefore, impacts from mechanical equipment would be less than significant.

Residential Stationary Noise

The project would also result in stationary noise that is typical of residential uses/neighborhoods, including the use of landscaping equipment, dogs barking, music playing, people talking, etc. These noise sources can generate noise levels up to 65 dBA at a distance of 50 feet.[3] However, noise events

[1] Elliott H. Berger, Rick Neitzel1, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.
[2] Cyril M. Harris, *Noise Control in Buildings*, 1994.
[3] Elliott H. Berger, Rick Neitzel1, and Cynthia A. Kladden, *Noise Navigator Sound Level Database with Over 1700 Measurement Values*, June 26, 2015.

from these stationary sources are generally sporadic, short in duration, and would not last for extended periods of time. In addition, stationary noise is generated by residences to the north, northwest, and southwest, and by the existing commercial uses to the east under existing conditions. Therefore, project stationary noise levels would not result in a noticeable increase in ambient noise and would comply with the noise standards set forth in Noise Element of Buena Park General Plan. Impacts would be less than significant impact.

Mobile Traffic Noise

Project implementation would result in an increase of traffic trips to project area roadways. According to the *Trip Generation Memorandum for the Proposed Craig Apartments Project in the City of Buena Park* (Kimley-Horn & Associates Inc., November 2022) (Traffic Impact Analysis), the project would generate 57 daily trips, with 5 morning peak hour trips and 8 evening peak hour trips. 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 barely perceptible 3-dBA increase.[4] According to Daily Traffic Flow by Orange County Transportation Authority (OCTA)[5], Beach Boulevard has approximately 65,000 average daily traffic (ADT). The proposed project would result in approximately 57 daily trips, which is not enough to double the existing traffic volumes on Beach Boulevard (the primary access roadway to the project site). Therefore, the proposed project would not generate enough traffic to result in a noticeable 3-dBA increase in ambient noise levels. Impacts would be less than significant.

Vibration Impacts

Increases in ground-borne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction on the project site would have the potential to result in varying degrees of temporary ground-borne vibration, depending on the specific construction equipment used and the operations involved.

This analysis discusses the level of human annoyance using vibration levels in VdB and will assess the potential for building damages using vibration levels in PPV (in/sec). This is because vibration levels calculated in root mean square (RMS) velocity[6] are best for characterizing human response to building vibration, while vibration level in PPV is best for characterizing potential for building damage.

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[4] 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.

[5] According to the Orange County Transportation Authority, *Traffic Flow Map*, 2021.

[6] The RMS velocity is defined as the average of the squared amplitude of the signal.

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 0.20 in/sec is considered safe and would not result in any construction vibration damage. This analysis uses the FTA architectural damage criterion for continuous vibrations at non-engineered timber and masonry buildings of 0.2 in/sec peak particle velocity (PPV) and human annoyance criterion 80 VdB in accordance with Caltrans and FTA guidance[7] to evaluate potential construction vibration impacts.

Table 5: Typical Construction Equipment Vibration Levels, lists reference vibration levels at 25 feet for project construction equipment. The nearest off-site building/structure is a parking garage located adjacent to the west boundary of the project site. Ground-borne vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. As indicated in Table 5, based on FTA data, vibration velocities from typical heavy construction equipment operations that would be used during project construction range from 0.003 to 0.076 in/sec PPV at 25 feet from the source of activity.

[7] California Department of Transportation, *Transportation and Construction Vibration Guidance Manual, Table 20*, September 2013; Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, September 2018.

Table 5: Typical Construction Equipment Vibration Levels					
Equipment	**Reference Vibration Level (VdB) at 25 Feet**	**Reference Vibration Level (in/sec PPV) at 25 Feet**	**Distance (ft)[1]**	**Maximum Vibration Level (VdB)**	**Maximum Vibration Level (in/sec PPV)**
Loaded Trucks	86	0.076	110	78	0.031
Jackhammer	79	0.035	45	71	0.014
Small Bulldozer/Tractors	58	0.003	20	61	0.004
Notes: VdB = vibration velocity; in/sec = inches per second; PPV = peak particle velocity 1. Distances reflect the nearest structure to the closest potential area of operation for each piece of construction equipment. All other structures would experience lower vibration levels.					
Source: Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Manual*, 2018.					

As shown in Table 5, vibration-generating construction equipment would operate at a distance ranging from 20 to 110 feet from the nearest structure (parking garage structure adjacent to the western project site boundary). At this distance, construction equipment vibration velocities would range from 61 to 78 VdB or 0.004 to 0.031 in/sec PPV. Therefore, ground-borne vibration generated from construction equipment would not exceed the 80 VdB human annoyance or 0.2 in/sec PPV building damage thresholds. It is also acknowledged that construction activities would occur throughout the project site and would not be concentrated within areas closest to the nearest off-site structure. Additionally, once operational, the project would not be a source of ground-borne vibration. Therefore, vibration impacts associated with the proposed project would be less than significant.

Conclusion

Project implementation would result in less than significant short-term and long-term noise and vibration impacts. No mitigation measures would be required. Therefore, the proposed Project would not result in significant effects related to noise and vibration.

Appendix A

RCNM Modeling Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/1/2022
Case Description: 01 Site Prep

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		117	0
Tractor	No	40	84		117	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	77.6	76.2	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
Northwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		175	0
Tractor	No	40	84		175	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		74.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		73.1	69.1	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	74.1	72.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Southwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		270	0
Tractor	No	40	84		270	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Grader		70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	70.4	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/1/2022
Case Description: 02 Grading

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		117	0
Tractor	No	40	84		117	0
Dozer	No	40		81.7	117	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
Grader	77.6	73.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	74.3	70.3	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	77.6	77.2	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
Northwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		175	0
Tractor	No	40	84		175	0
Dozer	No	40		81.7	175	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
Grader	74.1	70.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dozer	70.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	74.1	73.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Southwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Grader	No	40	85		270	0
Tractor	No	40	84		270	0
Dozer	No	40		81.7	270	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
Grader	70.4	66.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.4	65.4	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	67	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	70.4	69.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/1/2022
Case Description: 03 Building Construction

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	117	0
All Other Equipment > 5 HP	No	50	85		117	0
All Other Equipment > 5 HP	No	50	85		117	0
Tractor	No	40	84		117	0
Tractor	No	40	84		117	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	73.2	65.2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.6	74.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	77.6	74.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	77.6	79.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Northwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	175	0
All Other Equipment > 5 HP	No	50	85		175	0
All Other Equipment > 5 HP	No	50	85		175	0
Tractor	No	40	84		175	0
Tractor	No	40	84		175	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	69.7	61.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	74.1	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	74.1	71.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	73.1	69.1	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	74.1	76.4	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.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Southwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Crane	No	16		80.6	270	0
All Other Equipment > 5 HP	No	50	85		270	0
All Other Equipment > 5 HP	No	50	85		270	0
Tractor	No	40	84		270	0
Tractor	No	40	84		270	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Crane	65.9	57.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	70.4	67.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
All Other Equipment > 5 HP	70.4	67.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor	69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Tractor		69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	70.4	72.6	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.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/1/2022
Case Description: 04 Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Vibratory Concrete Mixer	No	20		80	117	0
Vibratory Concrete Mixer	No	20		80	117	0
Vibratory Concrete Mixer	No	20		80	117	0
Vibratory Concrete Mixer	No	20		80	117	0
Paver	No	50		77.2	117	0
Roller	No	20		80	117	0
Tractor	No	40	84		117	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibratory Concrete Mixer		72.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vibratory Concrete Mixer		72.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vibratory Concrete Mixer		72.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Vibratory Concrete Mixer		72.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Paver		69.8	66.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		72.6	65.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tractor		76.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	76.6	76.2	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
Northwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Vibratory Concrete Mixer	No	20		80	175	0
Vibratory Concrete Mixer	No	20		80	175	0
Vibratory Concrete Mixer	No	20		80	175	0
Vibratory Concrete Mixer	No	20		80	175	0
Paver	No	50		77.2	175	0
Roller	No	20		80	175	0
Tractor	No	40	84		175	0

		Results Calculated (dBA)		Noise Limits (dBA) Day		Evening		Night		Noise Limit Exceedance (dBA) Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Vibratory Concrete Mixer		69.1	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
Vibratory Concrete Mixer		69.1	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
Vibratory Concrete Mixer		69.1	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
Vibratory Concrete Mixer		69.1	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
Paver		66.3	63.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller		69.1	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
Tractor		73.1	69.1	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	73.1	72.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Southwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Vibratory Concrete Mixer	No	20		80	270	0
Vibratory Concrete Mixer	No	20		80	270	0
Vibratory Concrete Mixer	No	20		80	270	0
Vibratory Concrete Mixer	No	20		80	270	0
Paver	No	50		77.2	270	0

Roller	No	20		80	270	0
Tractor	No	40	84		270	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
Vibratory Concrete Mixer	65.4	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
Vibratory Concrete Mixer	65.4	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
Vibratory Concrete Mixer	65.4	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
Vibratory Concrete Mixer	65.4	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
Paver	62.6	59.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	65.4	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
Tractor	69.4	65.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	69.4	68.9	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 12/1/2022
Case Description: 05 AC

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
North	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	117	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)		70.3	66.3	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	70.3	66.3	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
Northwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	175	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)		66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	66.8	62.8	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #3 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Southwest	Residential	55	50	45

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	270	0

Results

		Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
				Day		Evening		Night		Day		Evening		Night	
Equipment		*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Compressor (air)		63	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Total	63	59	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Equipment	PPV at 25 feet (in/sec)	Calculated distance (feet) 25	Approximate L_V (VdB) at 25 feet	Calculated distance (feet) 45
Loaded trucks	0.076	0.076	86	78
Jackhammer	0.035	0.035	79	71
Small bulldozer	0.003	0.003	58	50
Rock Breaker	0.059	0.0590		
	PPV at 50 ft			
Blasting	0.4	1.1314		

$L_v(D) = L_v(25 \text{ feet}) - (30 \times \log_{10}(D/25 \text{ feet}))$

Notes:
1. Calculated using the following formula:
PPV equip = PPVref x (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 12-2 of the FTA Transit Noise and Vibration Impact Assessment Guidelines
D = the distance from the equipment to the receiver

Appendix G

Water Quality Management Plan

Water Quality Management Plan (WQMP)

Project Name:

CRAIG APARTMENT

7682,7692,7712,7722 CRAIG AVE.

BUENA PARK, CA 90621

Prepared for:

CRAIG & BEACH INVESTMENT, INC.

5681 BEACH BLVD.

BUENA PARK, CA 90621

Contact: Sean Mo

Email: smo@a-n-d-m-o-r-e.com

Phone: (213)925-9709

Prepared by:

Pacific Geotech, Inc.

Engineer Jiryaus Pukkanasut Registration No. 73728

1424 Rolling Hills Drive

Fullerton, CA 92835

(714) 723-9703

Prepared on: 5/02/22

Revised on: 3/17/23, 7/24/23, 8/21/23

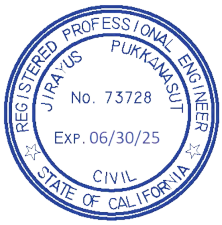


Project Owner's Certification			
Permit/Application No.	PA21-9, SP-22-13	Grading Permit No.	N/A
Tract/Parcel Map No.	TR 1211 M.M. 38/13	Building Permit No.	N/A
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			066-132-09, 066-132-15, 066-132-16, 066-132-17

This Water Quality Management Plan (WQMP) has been prepared for CRAIG AND BEACH INVESTMENT, INC., A CALIFORNIA CORPORATION by Pacific Geotech, Inc. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner: Yohan Lee			
Title	Owner		
Company	CRAIG AND BEACH INVESTMENT, INC., A CALIFORNIA CORPORATION		
Address	5681 Beach, Buena Park, CA 90621		
Email	smo@a-n-d-m-o-r-e.com		
Telephone #	213-788-1175		
Signature		Date	

Preparer (Engineer): Jirayus Pukkanasut			
Title	Civil Engineer	PE Registration #	73728
Company	Pacific Geotech, Inc.		
Address	1424 Rolling Hills Drive, Fullerton, CA 92835		
Email	jchunhacha@yahoo.com		
Telephone #	(714) 723-9703		
I hereby certify that this Water Quality Management Plan is in compliance with, and meets the requirements set forth in, Order No. R8-2009-0030/NPDES No. CAS618030, of the Santa Ana Regional Water Quality Control Board**.**			
Preparer Signature		Date	8/21/23
Place Stamp Here			

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Section I Discretionary Permit(s) and Water Quality Conditions

Provide discretionary permit and water quality information. *Refer to Section 2.1 in the Technical Guidance Document (TGD) available from the Orange County Stormwater Program (ocwatersheds.com).*

Project Infomation			
Permit/Application No.	PA21-9	Tract/Parcel Map No.	TBD
Additional Information/ Comments:	7682, 7692, 7712, 7722 Craig Ave Buena Park, CA 90621		
Water Quality Conditions			
Water Quality Conditions (list verbatim)	Prior to issuance of grading or building permits, permit applicant shall submit for approval by the city engineer, a Water Quality Management Plan (WQMP) specifically identifying Best Management Practices (BMP'S) that will be used on site to control predictable pollutant runoff. Applicant shall record the approved WQMP with the Orange County.		
Watershed-Based Plan Conditions			
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	a.Coyote Creek Channel is listed for Copper, Dissolved (68259), pH (68713), Indicator Bacteria (73217), Toxicity (90266), Malathion (94643), Iron (94644) Listed Pollutant/s w TMDL Copper, Dissolved (68259); Indicator Bacteria (73217) b.San Gabriel River (Reach 1) is listed Temperature, water (98591), pH (100433) c. San Gabriel River Estuary is listed for Nickel (72675), Oxygen, Dissolved (73104), Dioxin (73163), Copper (73269), Indicator Bacteria (98757) Listed Pollutant/s w TMDL Copper (73269); Indicator Bacteria (98757) d. San Pedro Bay is listed for Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (69050), PCBs (Polychlorinated biphenyls) (69051),		

	Toxicity (70412), Chlordane (99710) Listed Pollutant/s w TMDL Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (69050); PCBs (Polychlorinated biphenyls) (69051); Toxicity (70412); Chlordane (99710)

Section II Project Description

II.1 Project Description

Provide a detailed project description including:

- Project areas Disturbed area 30,114 sf (0.69ac); Property Area : 30,114 sf (0.69ac)
- The proposed areas are 6,049 sf of concrete walkway, 2,606 of landscape, 10,275 sf of pavement driveway and parking area, 8,453 sf of roof area, and 2,731 sf of bio-retention area with underdrain.
- Land uses : Apartment;
- Land cover: buildings, concrete pavement, landscape, asphalt pavement;
- Design elements: Bio-retention with underdrain;
- A general description not broken down by drainage management areas (DMAs).

Include attributes relevant to determining applicable source controls. *Refer to Section 2.2 in the TGD for information that must be included in the project description.*

Description of Proposed Project		
Development Category (Verbatim from WQMP):	1. New development projects that create 10,000 square feet or more of impervious surface. This category includes commercial, industrial, residential housing subdivisions, mixed-use, and public projects on private or public property that falls under the planning and building authority or the Permittees.	
Project Area (ft^2):30,114	Number of Dwelling Units: 12__	SIC Code: 7011_
Narrative Project Description:	The project is located on Craig Ave west of Beach Ave, City of Buena Park, California. The project is an apartment development. The project area is 0.69 acres. The proposed areas are 6,049 sf of concrete walkway, 2,606 of landscape, 10,275 sf of pavement driveway and parking area, 8,453 sf of roof area, and 2,731 sf of bio-retention area with underdrain. Trash room is roof covered and located on the ground floor between parking and north building. The city's trash service company, EDCO, will provide scout service to bring containers to collection vehicles. There will not be any on-site vehicle maintenance. Hydromodification is not required. Runoff sheet flow in the parking lot into proposed catch basin with filter	

<table>
<tr><td></td><td colspan="4">insert and pipe to bio-retention with underdrain. After the BMP treatment, runoff will be conveyed to a sump pump and will be pumped to the Craig Ave at 347GPM (0.774 cfs) per calculation.
Pre Q 2-24 = 0.92 cfs.
BMP Volume of water = 1,793 cf needs to be treated calculated from BMP's sizing calculation per the County of Orange requirement.</td></tr>
<tr><td rowspan="2">Project Area</td><td colspan="2">Pervious</td><td colspan="2">Impervious</td></tr>
<tr><td>Area
(acres or sq ft)</td><td>Percentage</td><td>Area
(acres or sq ft)</td><td>Percentage</td></tr>
<tr><td>Pre-Project Conditions</td><td>29,212 sf</td><td>97</td><td>902 sf</td><td>3</td></tr>
<tr><td>Post-Project Conditions</td><td>5,337 sf</td><td>18</td><td>24,777sf</td><td>82</td></tr>
<tr><td>Drainage Patterns/Connections</td><td colspan="4">Predevelopment:
Existing site is a vacant land
Proposed development will be an apartment. Access to the development located on the northeast corner of the property from Craig Ave There will be 2 proposed buildings separated by a permeable pavement drive. There are concrete walkway and planters along northerly and southerly of the property. The bio-retention with underdrain is located along the westerly of the property.
Trash will be taken out through the back door to a roof covered trash enclosure. It is located at the front of the existing hotel building.
There will not be any on-site vehicle maintenance.
Hydromodification is not required for this project.
Runoff sheet flow in the parking lot into proposed catch basin with flogard plus filter insert and pipe to bio-retention with underdrain. After the BMP treatment, runoff will be conveyed to a sump pump and will be pumped to the Craig Ave at 347GPM (0.774 cfs) per detention basin calculation.
Pre Q 2-24 = 0.92 cfs.
BMP Volume of water = 1,793 cf needs to be treated calculated from BMP's sizing calculation per the County of Orange requirement.</td></tr>
</table>

II.2 Potential Stormwater Pollutants

Determine and list expected stormwater pollutants based on land uses and site activities. *Refer to Section 2.2.2 and Table 2.1 in the TGD for guidance.*

Pollutants of Concern			
Pollutant	Circle One: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	(E)	N	Roof, Landscape, Pavement
Nutrients	(E)	N	Landscape
Heavy Metals	(E)	N	Cars
Pathogens (Bacteria/Virus)	(E)	N	
Pesticides	(E)	N	Landscape maintenance
Oil and Grease	(E)	N	Cars
Toxic Organic Compounds	E	(N)	
Trash and Debris	(E)	N	Roof, Landscape, Pavement, Food.

II.3 Hydrologic Conditions of Concern

Determine if streams located downstream from the project area are determined to be potentially susceptible to hydromodification impacts. *Refer to Section 2.2.3.1 in the TGD for* NOC *or Section 2.2.3.2 for* <SOC>.

☒ No – Show map

☐ Yes – Describe applicable hydrologic conditions of concern below. *Refer to Section 2.2.3 in the TGD.*

The site runoff will drain into Brea Creek Channel which is stabilized channel.

HCOC is not required.

II.4 Post Development Drainage Characteristics

Describe post development drainage characteristics. *Refer to Section 2.2.4 in the TGD.*

The project is located on Craig Ave west of Beach Ave, City of Buena Park, California. The project is an apartment development. The project area is 0.69 acres.

The proposed areas are 6,049 sf of concrete walkway, 2,606 of landscape, 10,275 sf of pavement driveway and parking area, 8,453 sf of roof area, and 2,731 sf of bio-retention area with underdrain.

Trash room is roof covered and located on the ground floor between parking and north building. The city's trash service company, EDCO, will provide scout service to bring containers to collection vehicles.

II.5 Property Ownership/Management

Describe property ownership/management. *Refer to Section 2.2.5 in the TGD.*

Craig & Beach Investment, Inc. will be responsible for the maintenance of all BMPs.

Company Name: Craig & Beach Investment, Inc.

Address: 5681 Beach Blvd. Buena Park, CA 90621

Owner Name: Yohan Lee

Email: ylee@yleelaw.com

Phone: (714) 523-2700

Section III Site Description

III.1 Physical Setting

Fill out table with relevant information. *Refer to Section 2.3.1 in the TGD.*

Planning Area/ Community Name	
Location/Address	7682, 7692, 7712, 7722 Craig Ave Buena Park, CA 90621
Land Use	Residential
Zoning	RM-20 (Z-22-1)- Multi Family
Acreage	Disturbed 0.69 acres
Predominant Soil Type	The earth materials encountered in the boreholes and test pits consist of up to approximately two (2) feet of fill underlain by younger alluvial deposits, which extend to the depths explored. Detailed logs of the boreholes are presented on Figures B-1 and B-2 in Appendix B of the soil report.

III.2 Site Characteristics

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. Refer to Section 2.3.2 in the TGD.

Precipitation Zone	*Shown on Figure XVI-1 Of the TGD, I = 0.95 inch/hour*
Topography	The site is generally flat. Elevation range from 77.5 AGL.to 76.5 AGL. Sloping down from southeast to northeast with the length of approximately 281 feet.
Drainage Patterns/Connections	Proposed development will be an apartment. Access to the development located on the northeast corner of the property from Craig Ave. The site is flat. Runoff flows from east to west. There will be 2 proposed buildings separated by a pavement drive. There are concrete walkway and planters along northerly and southerly of the property. There are total 7 bio-retentions with underdrain. North building roof runoff will be treated in 3 bio-

	retentions with underdrain located north of the north building. Treated runoff will be piped to Craig Ave. South building roof runoff will be treated in 3 bio-retentions with underdrain located south of the south building. Treated runoff will be piped to a sump pump located in the north west parking area. Runoff in the parking lot and concrete walk will sheet flow into bio-retention with underdrain located on the west side of the property. After the BMP treatment, runoff will be conveyed to a sump pump and will be pumped to the Craig Ave at 347GPM (0.774 cfs).
Soil Type, Geology, and Infiltration Properties	Group B soils. They have a moderate infiltration rate when thoroughly wetted and consist chiefly of moderately deep to deep and moderately well to well drained soils with moderately fine to moderately coarse texture.

Site Characteristics (continued)	
Hydrogeologic (Groundwater) Conditions	Groundwater seepage was encountered in the boreholes at a depth of approximately fortytwo (42) feet. However, Seismic Hazard Evaluation for the La Habra Quadrangle by the State of California indicates that the highest historic water level in this area was recorded near the ground surface. Highest historic water level is "0" A copy of Highest Ground Water Levels map is presented on Figure C-3 in Appendix C of soil report in Appendix P of this report.
Geotechnical Conditions (relevant to infiltration)	The site is located in liquefaction area. The infiltration is prohibited for this site. According to the State's GeoTracker website, the project area is not located near an open Leaking Underground Storage Tank (LUST) cleanup site. Per the TGD requirements, infiltration is prohibited within 250 feet of contaminated sites.
Off-Site Drainage	No offsite water will flow onto the site.
Utility and Infrastructure Information	There will be utilities services such as sewer, gas, power, tv, and water stub to the site at different location from BMPs facilities.

III.3 Watershed Description

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.3 in the TGD.*

Receiving Waters	San Gabriel River, Coyote Creek, San Gabriel River Estuary, and San Pedro Bay.
303(d) Listed Impairments	a.Coyote Creek Channel is listed for Copper, Dissolved (68259), pH (68713), Indicator Bacteria (73217), Toxicity (90266), Malathion (94643), Iron (94644) Listed Pollutant/s w TMDL Copper, Dissolved (68259); Indicator Bacteria (73217) b.San Gabriel River (Reach 1) is listed Temperature, water (98591), pH (100433) c. San Gabriel River Estuary is listed for Nickel (72675), Oxygen, Dissolved (73104), Dioxin (73163), Copper (73269), Indicator Bacteria (98757) Listed Pollutant/s w TMDL Copper (73269); Indicator Bacteria (98757) d. San Pedro Bay is listed for Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (69050), PCBs (Polychlorinated biphenyls) (69051), Toxicity (70412), Chlordane (99710) Listed Pollutant/s w TMDL Total DDT (sum of 4,4'- and 2,4'- isomers of DDT, DDE, and DDD) (69050); PCBs (Polychlorinated biphenyls) (69051); Toxicity (70412); Chlordane (99710)
Applicable TMDLs	Heavy Metals (Technical TMDL1) 1This TMDL has been adopted for Coyote Creek/San Gabriel River by the Los Angeles Regional Water Quality Control Board (Region 4); however it applies to the areas of Orange County that drain to Coyote Creek and San Gabriel River.
Pollutants of Concern for the Project	Suspended-Solid/ Sediment, Nutrients, Heavy Metals, Pathogens (Bacteria/Virus), Pesticides, Oil and Grease, Trash and Debris
Environmentally Sensitive and Special Biological Significant Areas	The project is not located within any known environmentally sensitive or special biological significant areas

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

Describe project performance criteria. Several steps must be followed in order to determine what performance criteria will apply to a project. These steps include:

- If the project has an approved WIHMP or equivalent, then any watershed specific criteria must be used and the project can evaluate participation in the approved regional or sub-regional opportunities. The local Permittee planning or NPDES staff should be consulted regarding the existence of an approved WIHMP or equivalent.
- Determine applicable hydromodification control performance criteria. *Refer to Section 7.II-2.4.2.2 of the Model WQMP.*
- Determine applicable LID performance criteria. *Refer to Section 7.II-2.4.3 of the Model WQMP.*
- Determine applicable treatment control BMP performance criteria. *Refer to Section 7.II-*3.2.2 *of the Model WQMP.*
- Calculate the LID design storm capture volume for the project. *Refer to Section 7.II-2.4.3 of the Model WQMP.*

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?	YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	There are currently no approved WIHMPs for the San Gabriel River-Coyote Creek Watershed.	

Project Performance Criteria (continued)

If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	For proposed projects within the North County permit area that may have an HCOC, each Priority Project proponent must determine the impact of the proposed development on the downstream hydrologic characteristics. The evaluation of potential impacts is based on the following for a two-year frequency storm event: • Increases in runoff volume; • Decreases in infiltration; • Changes in time of concentration; • Potential for increases in post development downstream erosion; and, • Potential for adverse downstream impacts on physical structure, aquatic and riparian habitat. A project does not have an HCOC if either of the following conditions is met: • The volumes and time of concentration of stormwater runoff for the postdevelopment condition do not significantly exceed those of the predevelopment condition for a two-year frequency storm event (a difference of five percent or less is considered insignificant). • The site infiltrates at least the runoff from a two-year storm event. If a hydrologic condition of concern (HCOC) exists, priority projects shall implement onsite or regional hydromodification controls such that: • Post-development runoff volume for the two-year frequency storm does not exceed that of the predevelopment condition by more than five percent, and • Time of concentration of post-development runoff for the two-year storm event is not less than that for the predevelopment condition by more than five percent.1 Where the Project WQMP documents that excess runoff volume from the two-year runoff event cannot feasibly be retained and where in-stream controls cannot be used to otherwise mitigate HCOCs, the project shall implement on-site or regional hydromodification controls to: • Retain the excess volume from the two-year runoff event to the MEP, and • Implement on-site or regional hydromodification controls such that the postdevelopment runoff two-year peak flow rate is no greater than 110 percent of the predevelopment runoff two-year peak flow rate. At any point in this process, a project-specific engineering analysis conducted by a licensed geomorphic professional may find that the level of hydrologic control provided through on-site, regional, and/or in-stream hydromodification controls is adequate to addresses hydrologic conditions of concern. Orange County will be developing WIHMPs for the North County permit area that integrates WQ, hydromodification, water supply, and habitat conditions for the following watersheds: • Coyote Creek-San Gabriel River • Anaheim Bay-Huntington Harbour • Santa Ana River • Newport Bay-Newport Coast

	The WIHMP will include: (1) maps to identify areas susceptible to hydromodification including downstream erosion, impacts on physical structure, impacts on riparian and aquatic habitats and areas where stormwater and urban runoff infiltration is possible and appropriate; (2) a hydromodification model to make available as a tool to enable project proponents to readily select stormwater preventive and mitigative site BMP measures; and (3) identification of regional facilities and their tributary areas in which different site performance standards may apply. Once a WIHMP is available for the watershed in which a the proposed project is located, the plans may specify hydromodification management standards for each sub-watershed and will provide assessment tools to readily select stormwater preventive and mitigative site BMP measures. Watersheds that do not have developed WIHMPs should use the HCOC criteria detailed in this section and in the TGD. WIHMPs will also identify integrated WQ, hydromodification, water supply, and habitat strategies. These strategies may include identification of regional facilities and their tributary areas or identification of watershed-based considerations related to retention of stormwater on-site which could be used to improve the application of feasibility criteria described in **TGD Section 2.4.2**.
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	The following performance criteria for LID implementation are stated in both permits: • Priority Projects must infiltrate, harvest and use, evapotranspire, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume). • A properly designed biotreatment system may only be considered if infiltration, harvest and use, and evapotranspiration (ET) cannot be feasibly implemented for the full design capture volume. In this case, infiltration, harvest and use, and ET practices must be implemented to the greatest extent feasible and biotreatment may be provided for the remaining design capture volume. A diversity of controls must be provided, where feasible, to achieve the greatest feasible retention of the Design Capture Volume, then if necessary, biotreatment of the remaining design capture volume. The Design Capture Storm Depth is the 85th percentile, 24-hr storm depth that, when applied to the project site results in the design capture volume. The design capture storm depth varies across the county and is shown in **TGD Appendices III**. The TGD provides information for determining the applicable "design capture storm depth" to apply to a project to calculate design capture volume as well as guidance for recommended hydrologic methods. Equivalent performance criteria have been synthesized from permit requirements with consideration of the MEP standard and analysis of local precipitation and ET patterns. The following performance criteria result in capture and retention and/or biotreatment of 80 percent of average annual stormwater runoff volume. The performance criteria for LID are stated as follows: • LID BMPs must be designed to retain, on-site, (infiltrate, harvest and use, or

	evapotranspire) stormwater runoff up to 80 percent average annual capture efficiency • LID BMPs must be designed to: o Retain, on-site, (infiltrate, harvest and use, or evapotranspire) stormwater runoff as feasible up to the Design Capture Volume, and o Recover (i.e., draw down) the storage volume as soon as possible after a storm event (see criteria for maximizing drawdown rate in the **TGD Appendix XI**), and, if necessary o Biotreat, on-site, additional runoff, as feasible, up to 80 percent average annual capture efficiency (cumulative, retention plus biotreatment), and, if necessary o NOC Permit Area only – retain or biotreat, in a regional facility, the remaining runoff up to 80 percent average annual capture efficiency (cumulative, retention plus biotreatment, on-site plus off-site), and, if necessary o Fulfill alternative compliance obligations for runoff volume not retained or biotreated up to 80 percent average annual capture efficiency using treatment controls or other alternative approaches as described in Section 7.II-3. Within the South County Permit area, the volume provided in the pre-filter detention volume (surface storage) and pores of biotreatment BMPs may not be less than 75 percent of the design capture volume, regardless of the average annual capture efficiency achieved. Further discussion on determining the pre-filter detention volume is provided in the **TGD Appendix II**. Instructions for calculating BMP sizing to meet these criteria are provided in the **TGD** and the **TGD Appendices**.
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	N/A
Calculate LID design storm capture volume for Project.	From Worksheet B DCV = 1,793 CF

IV.2. SITE DESIGN AND DRAINAGE PLAN

Describe site design and drainage plan including

- A narrative of site design practices utilized or rationale for not using practices;
- A narrative of how site is designed to allow BMPs to be incorporated to the MEP
- A table of DMA characteristics and list of LID BMPs proposed in each DMA.
- Reference to the WQMP plot plan.
- Calculation of Design Capture Volume (DCV) for each drainage area.
- A listing of GIS coordinates for LID and Treatment Control BMPs (unless not required by local jurisdiction).

Refer to Section 2.4.2 in the TGD.

The project is located on the south of Craig Ave west of Beach Blvd, City of Buena Park, California. The project is an apartment development. The project area is 0.69 acres.

Property Area = 0.69 acres as shown on WQMP exhibit.

Minimum DCV = 1,793 CF for the entire site.

The site will be divided into 7 DMA areas.

Tributary Area A1 = 0.034 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 98.02 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 98.02/(0.25+0.625) = 112.02 sf required. Provided 128 sf of bio-retention with underdrain ok

Tributary Area A2 = 0.034 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 98.02 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 98.02/(0.25+0.625) = 112.02 sf required. Provided 128 sf of bio-retention with underdrain ok

Tributary Area A3 = 0.038 acres as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 110.08 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed

through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 110.08/(0.25+0.625) = 125.8 sf required. Provided 128 sf of bio-retention with underdrain ok

Tributary B1 = 0.034 acres as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 98.49 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed

through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 98.49/(0.33+0.625) = 103.13 sf required. Provided 105 sf of bio-retention with underdrain ok

Tributary Area B2 = 0.035 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 101.39 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 101.39/(0.25+0.625) = 115.87 sf required. Provided 117 sf of bio-retention with underdrain ok

Tributary Area B3 = 0.035 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 101.39 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 101.39/(0.25+0.625) = 115.87 sf required. Provided 117 sf of bio-retention with underdrain ok

Tributary Area C1 = 0.419 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 1182.45 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 1182.45/(0.25+0.625) = 1,351 sf required. Provided 2,009 sf of bio-retention with underdrain ok

IV.3 LID BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

Each sub-section below documents that the proposed design features conform to the applicable project performance criteria via check boxes, tables, calculations, narratives, and/or references to worksheets. *Refer to Section 2.4.2.3 in the TGD for selecting LID BMPs and Section 2.4.3 in the TGD for conducting conformance analysis with project performance criteria.*

IV.3.1 Hydrologic Source Controls

Proposed bio-retention for BMP instead of HSCs. The site is located in liquefaction area and historic high ground water area.

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐

IV.3.2 Infiltration BMPs

Identify infiltration BMPs to be used in project. If design volume cannot be met state why BMPs cannot be met

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Strom Capture Volume can be met with infiltration BMPs. If not document how much can be met with infiltration and document why it is not feasible to meet the full volume with infiltration BMPs.

The site is located in liquefaction area. The infiltration is prohibited for this site. According to the State's GeoTracker website, the project area is not located near an open Leaking Underground Storage Tank (LUST) cleanup site. Per the TGD requirements, infiltration is prohibited within 250 feet of contaminated sites.

The highest historic water level in this area was recorded near the ground surface. Highest historic water level is "0"

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, describe any evapotranspiration, rainwater harvesting BMPs. <Delete or leave blank if not used>

Name	Included?
All HSCs; *See Section IV.3.1*	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Strom Capture Volume can be met with evapotranspiration, rainwater harvesting BMPs in combination with infiltration BMPs. If not document how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with either of these BMPs categories.

Proposed Bio-filtration for BMP treatment.

Provided supporting assumptions and citations for controlling demand calculation in worksheet J
For toilet flushing minimum use required 531.3 gpd. Project estimate use is 9.3 gpd
For irrigation demand the minimum landscape area required is 0.34 ac. Project provides 0.11 ac

Harvest water demand does not meet the minimum requirement; therefore, harvest and reuse water is not feasible for this development.

IV.3.4 Biotreatment BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, and/or evapotranspiration and rainwater harvesting BMPs, describe biotreatment BMPs. Include sections for selection, suitability, sizing, and infeasibility, as applicable. <Delete or leave blank if not used>

Name	Included?
Bioretention with underdrains	☒
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☐
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Strom Capture Volume can be met with infiltration, evapotranspiration, rainwater harvesting and/or biotreatment BMPs. If not document how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with either of these BMPs categories.

Minimum DCV requires 1,793.30CF

See calculation in Section IV.2

IV.3.5 Hydromodification Control BMPs

Describe hydromodification control BMPs. See Section 5 TGD. Include sections for selection, suitability, sizing, and infeasibility, as applicable. Detail compliance with Prior Conditions of Approval. <Delete or leave blank if not used>

Hydromodification Control BMPs	
BMP Name	**BMP Description**
Not required	

IV.3.6 Regional/Sub-Regional LID BMPs

Describe regional/sub-regional LID BMPs in which the project will participate. *Refer to Section 7.II-2.4.3.2 of the Model WQMP.* <Delete or leave blank if not used>

Regional/Sub-Regional LID BMPs
There are no Regional/Sub- Regional LID BMPs for this site.

IV.3.7 Treatment Control BMPs

Treatment control BMPs can only be considered if the project conformance analysis indicates that it is not feasible to retain the full design capture volume with LID BMPs. Describe treatment control BMPs including sections for selection, sizing, and infeasibility, as applicable. <Delete or leave blank if not used>

Treatment Control BMPs	
BMP Name	**BMP Description**

IV.3.8 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs

Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	See section V
N2	Activity Restrictions	☒	☐	See section V
N3	Common Area Landscape Management	☒	☐	See section V
N4	BMP Maintenance	☒	☐	See section V
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	See section V
N6	Local Industrial Permit Compliance	☐	☒	The development is not an industrial service.
N7	Spill Contingency Plan	☐	☒	No hazardous material stored on site.
N8	Underground Storage Tank Compliance	☐	☒	No Underground Storage Tank on site.
N9	Hazardous Materials Disclosure Compliance	☐	☒	No hazardous material stored on site.
N10	Uniform Fire Code Implementation	☒	☐	See section V
N11	Common Area Litter Control	☒	☐	See section V
N12	Employee Training	☒	☐	See section V
N13	Housekeeping of Loading Docks	☐	☒	No loading dock onsite.
N14	Common Area Catch Basin Inspection	☒	☐	See section V
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	See section V
N16	Retail Gasoline Outlets	☐	☒	No retail gasoline on site.

IV.3.9 Structural Source Control BMPs

Fill out structural source control check box forms or provide a brief narrative explaining if Structural source controls were not used.

Structural Source Control BMPs

Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☒	☐	See section V
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	Not propose
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	See section V
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	See section V
S5	Protect slopes and channels and provide energy dissipation	☐	☒	Not propose
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☒	☐	
S6	Dock areas	☐	☒	Not propose
S7	Maintenance bays	☐	☒	Not propose
S8	Vehicle wash areas	☐	☒	Not propose
S9	Outdoor processing areas	☐	☒	Not propose
S10	Equipment wash areas	☐	☒	Not propose
S11	Fueling areas	☐	☒	Not propose
S12	Hillside landscaping	☐	☒	Not propose
S13	Wash water control for food preparation areas	☐	☒	Not propose
S14	Community car wash racks	☐	☒	Not propose

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the TGD for calculation methods for applying water quality credits.*

<table>
<tr><th colspan="5">Description of Proposed Project</th></tr>
<tr><td colspan="5">Project Types that Qualify for Water Quality Credits (Select all that apply):</td></tr>
<tr><td colspan="2">☐Redevelopment projects that reduce the overall impervious footprint of the project site.</td><td colspan="2">☐Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.</td><td>☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).</td></tr>
<tr><td colspan="2">☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).</td><td colspan="2">☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned</td><td>☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).</td></tr>
<tr><td>☐Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.</td><td>☐ Developments in a city center area.</td><td>☐ Developments in historic districts or historic preservation areas.</td><td>☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.</td><td>☐In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.</td></tr>
<tr><td>Calculation of Water Quality Credits
(if applicable)</td><td colspan="4"></td></tr>
</table>

IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

The entire DCV is being treated by LID BMPs. Alternative compliance is not proposed.

Section V Inspection/Maintenance Responsibility for BMPs

"The owner is aware of the maintenance responsibilities of the proposed BMPs. A funding mechanism is in place to maintain the BMPs at the frequency stated in the WQMP."

Craig & Beach Investment, Inc will be responsible for the maintenance of all BMPs.

Company Name: Craig & Beach Investment, Inc.

Address: 5681 Beach Blvd. Buena Park, CA 90621

Owner Name: Yohan Lee

Email: ylee@yleelaw.com

Phone: (714) 523-2700

Fill out information in table below. Prepare and attach an Operation and Maintenance Plan. Identify the mechanism through which BMPs will be maintained. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies. *Refer to Section 7.II 4.0 in the Model WQMP.*

BMP Inspection/Maintenance

BMP	Reponsible Party(s)	Inspection/ Maintenance Activities Required	Minimum Frequency of Activities
N1 Education for Property Owners, Tenants and Occupants	Owner	Provide WQMP training orientation to new tenants, who will, in turn, provide training to their employees within two weeks of hire/occupancy	Minimum once a year to include educational materials contained in the approved Water Quality Management Plan

N2 Activity Restrictions	Owner	No Carwash No overwatering	
Common Area Landscape Management	Owner through its landscape contractor	Weekly sweeping trash pick up as necessary within all project areas and common landscape areas. Daily inspection of trash receptacles to ensure that lids are closed and pick up any excess trash on the ground, noting trash disposal violations	Weekly during regular landscape maintenance
N4 BMP maintenance	Owner through professional	Inspect/ Clean up trash and debris that clog the system	Prior to, during and following the rainy season.
Bio-retention with underdrain	Owner through professional	Inspect/ Clean up trash and debris that clog the system. Remove sediment buildup when necessary, clear out all observed trash and debris.	1 inspection Prior to, weekly inspection during and 1 inspection following the rainy season. Beginning of the rainy season (October 1st)
N5 Title 22 CCR Compliance	Owner through professional	24 hours Automatic monitoring system. System to be maintain yearly.	24 hours automatic monitoring system. System to be maintained yearly.
N10 Uniform Fire Code Implementation	Owner	Compliance with Article 80 of the Uniform Fire Code enforced by fire protection agency	Yearly report to Fire Department

N 11 Common Area Litter Control	Owner through its landscape contractor	Observe the trash enclosure area to make sure that there is no trash outside the container and the lid is closed at all time Put the litter into the trash bin and close the lid	Daily
N12 Employee Training	Owner	Provide WQMP training orientation to new tenants, who will, in turn, provide training to their employees within two weeks of hire/occupancy	Minimum once a year to include educational materials contained in the approved Water Quality Management Plan
N14 Common Area Catch Basin Inspection	Owner	Catch basins will be inspected at a minimum on a yearly basis, and prior to the storm season, no later than October 1st of each year	At a minimum, basins will be inspected and cleaned around October 1ST of each year, prior to "first flush" storm, or as necessary after large storm events to clear inlets of trash, debris and silt..
N15 Street Sweeping Private Streets and Parking Lots	Owner through its landscape contractor	Observe that there is no trash onsite outside the trash can Put the litter into the trash can	Daily and Weekly during regular maintenance
S1 Storm Drain Stencil	Owner	Inspect the paint is legible. Re-paint as necessary	Yearly

S3 Design Trash Enclosures to Reduce Pollutant Introduction	Owner/ Designer	1. Paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements diverted around the area, screened or walled to prevent off-site transport of trash; and 2. Provide solid roof or awning to prevent direct precipitation	Sweep Clean Daily. Collect trash weekly or as needed.
S4 (SD-12) Use Efficient Irrigation Systems and Landscape Design	Owner/Designer	Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system.	Observe that the system work as design daily. Fix if broken.
S13 Wash water control for food preparation areas	Owner through its employees	No dumping wash water outside. Inspect/Clean up waste that clog the drain	No dumping wash water outside. Inspect/Clean up waste that clog the drain

Section VI Site Plan and Drainage Plan

VI.1 SITE PLAN AND DRAINAGE PLAN

Include a site plan and drainage plan sheet set containing the following minimum information:

- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Drainage connections
- BMP details

VI.2 ELECTRONIC DATA SUBMITTAL <optional – delete if not used>

The minimum requirement is to provide submittal of PDF exhibits in addition to hard copies. Format must not require specialized software to open.

If the local jurisdiction requires specialized electronic document formats (CAD, GIS) to be submitted, this section will be used to describe the contents (e.g., layering, nomenclature, georeferencing, etc.) of these documents so that they may be interpreted efficiently and accurately.

Section VII Educational Materials

Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. For the copy submitted to the Permittee, only attach the educational materials specifically applicable to the project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	**Check If Applicable**	**Business Material (http://www.ocwatersheds.com)**	**Check If Applicable**
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☐
Household Tips	☐	**Other Material**	**Check If Attached**
Proper Disposal of Household Hazardous Waste	☐		
Recycle at Your Local Used Oil Collection Center (North County)	☐	SD-10: Site Design & Landscaping Planning	☒
Recycle at Your Local Used Oil Collection Center (Central County)	☐	SD-11: Roof Runoff Controls	☒
Recycle at Your Local Used Oil Collection Center (South County)	☐	SD-12: Efficient Irrigation	☒
Tips for Maintaining a Septic Tank System	☐	SD-13: Storm Drain Signage	☒
Responsible Pest Control	☒		☐
Sewer Spill	☒		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☒		☐
Tips for Projects Using Paint	☒		☐

Appendix A
Educational Materials



Preventing water pollution at your commercial/industrial site

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many landscape and building maintenance activities can lead to water pollution if you're not careful. Paint, chemicals, plant clippings and other materials can be blown or washed into storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour soap or fertilizers into the ocean, so why would you let them enter the storm drains? Follow these easy tips to help prevent water pollution.

Some types of industrial facilities are required to obtain coverage under the State General Industrial Permit. For more information visit: **www.swrcb.ca.gov/stormwater/industrial.html**

For more information, please call the **Orange County Stormwater Program** at **1-877-89-SPILL** (1-877-897-7455) or visit **www.ocwatersheds.com**

To report a spill, call the **Orange County 24-Hour Water Pollution Problem Reporting Hotline** at **1-877-89-SPILL** (1-877-897-7455).

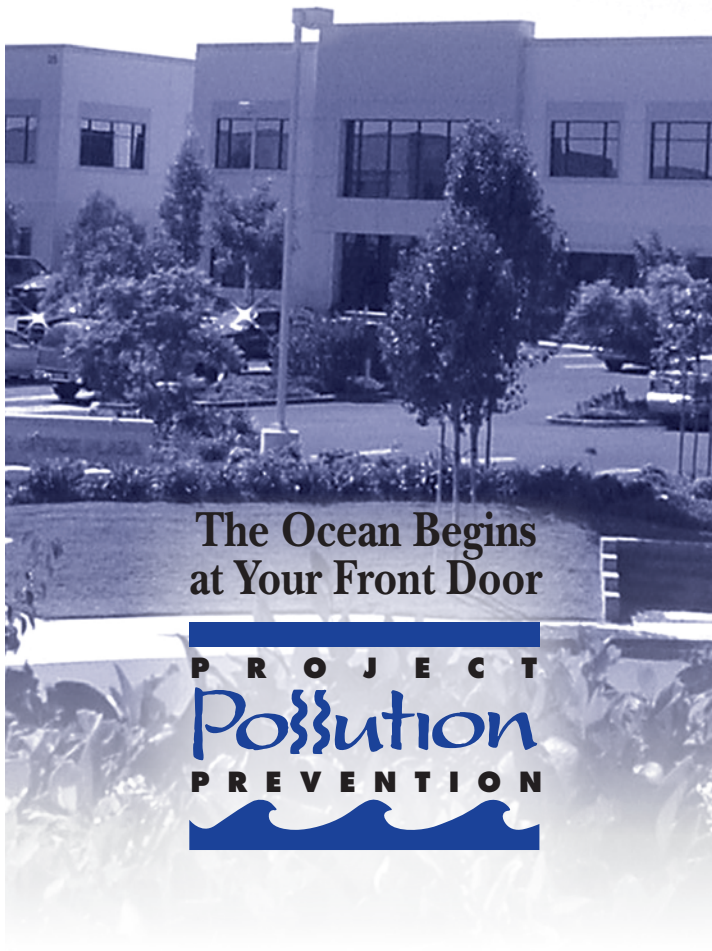
For emergencies, dial 911.

RECYCLE USED OIL

Printed on Recycled Paper

Help Prevent Ocean Pollution:

Proper Maintenance Practices for Your Business



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Proper Maintenance Practices for your Business

Landscape Maintenance

- Compost grass clippings, leaves, sticks and other vegetation, or dispose of it at a permitted landfill or in green waste containers. Do not dispose of these materials in the street, gutter or storm drain.
- Irrigate slowly and inspect the system for leaks, overspraying and runoff. Adjust automatic timers to avoid overwatering.
- Follow label directions for the use and disposal of fertilizers and pesticides.
- Do not apply pesticides or fertilizers if rain is expected within 48 hours or if wind speeds are above 5 mph.
- Do not spray pesticides within 100 feet of waterways.
- Fertilizers should be worked into the soil rather than dumped onto the surface.
- If fertilizer is spilled on the pavement or sidewalk, sweep it up immediately and place it back in the container.

Building Maintenance

- Never allow washwater, sweepings or sediment to enter the storm drain.
- Sweep up dry spills and use cat litter, towels or similar materials to absorb wet spills. Dispose of it in the trash.
- If you wash your building, sidewalk or parking lot, you **must** contain the water. Use a shop vac to collect the water and contact your city or sanitation agency for proper disposal information. Do not let water enter the street, gutter or storm drain.
- Use drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of materials in the trash.
- Use a ground cloth or oversized tub for mixing paint and cleaning tools.
- Use a damp mop or broom to clean floors.
- Cover dumpsters to keep insects, animals, rainwater and sand from entering. Keep the area around the dumpster clear of trash and debris. Do not overfill the dumpster.
- Call your trash hauler to replace leaking dumpsters.
- Do not dump any toxic substance or liquid waste on the pavement, the ground, or near a storm drain. Even materials that seem harmless such as latex paint or biodegradable cleaners can damage the environment.

Never Dispose of Anything in the Storm Drain.

- Recycle paints, solvents and other materials. For more information about recycling and collection centers, visit **www.oclandfills.com**.
- Store materials indoors or under cover and away from storm drains.
- Use a construction and demolition recycling company to recycle lumber, paper, cardboard, metals, masonry, carpet, plastic, pipes, drywall, rocks, dirt, and green waste. For a listing of construction and demolition recycling locations in your area, visit **www.ciwmb.ca.gov/recycle.**
- Properly label materials. Familiarize employees with Material Safety Data Sheets.

PROJECT Pollution PREVENTION



Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as pest control can lead to water pollution if you're not careful. Pesticide treatments must be planned and applied properly to ensure that pesticides do not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump pesticides into the ocean, so don't let it enter the storm drains. Pesticides can cause significant damage to our environment if used improperly. If you are thinking of using a pesticide to control a pest, there are some important things to consider.

For more information,
please call
University of California Cooperative
Extension Master Gardeners at
(714) 708-1646
or visit these Web sites:
www.uccemg.org
www.ipm.ucdavis.edu

For instructions on collecting a specimen sample visit the Orange County Agriculture Commissioner's website at:
http://www.ocagcomm.com/ser_lab.asp

To report a spill, call the
Orange County 24-Hour
Water Pollution Problem
Reporting Hotline
at 1-877-89-SPILL (1-877-897-7455).

For emergencies, dial 911.

Information From:
Cheryl Wilen, Area IPM Advisor; Darren Haver, Watershed Management Advisor; Mary Louise Flint, IPM Education and Publication Director; Pamela M. Geisel, Environmental Horticulture Advisor; Carolyn L. Unruh, University of California Cooperative Extension staff writer. Photos courtesy of the UC Statewide IPM Program and Darren Haver.

Funding for this brochure has been provided in full or in part through an agreement with the State Water Resources Control Board (SWRCB) pursuant to the Costa-Machado Water Act of 2000 (Prop. 13).

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Help Prevent Ocean Pollution:

Responsible Pest Control



Tips for Pest Control

Key Steps to Follow:

Step 1: Correctly identify the pest (insect, weed, rodent, or disease) and verify that it is actually causing the problem.



Three life stages of the common lady beetle, a beneficial insect.

This is important because beneficial insects are often mistaken for pests and sprayed with pesticides needlessly.

Consult with a Certified Nursery Professional at a local nursery or garden center or send a sample of the pest to the Orange County Agricultural Commissioner's Office.

Determine if the pest is still present – even though you see damage, the pest may have left.

Step 2: Determine how many pests are present and causing damage.



Small pest populations may be controlled more safely using non-pesticide techniques. These include removing food sources, washing off leaves with a strong stream of water, blocking entry into the home using caulking and replacing problem plants with ones less susceptible to pests.

Integrated Pest Management (IPM) usually combines several least toxic pest control methods for long-term prevention and management of pest problems without harming you, your family, or the environment.

UC CE University of California Cooperative Extension

Step 3: If a pesticide must be used, choose the least toxic chemical.

Obtain information on the least toxic pesticides that are effective at controlling the target pest from the UC Statewide Integrated Pest Management (IPM) Program's Web site at www.ipm.ucdavis.edu.

Seek out the assistance of a Certified Nursery Professional at a local nursery or garden center when selecting a pesticide. Purchase the smallest amount of pesticide available.

Apply the pesticide to the pest during its most vulnerable life stage. This information can be found on the pesticide label.

Step 4: Wear appropriate protective clothing.

Follow pesticide labels regarding specific types of protective equipment you should wear. Protective clothing should always be washed separately from other clothing.

Step 5: Continuously monitor external conditions when applying pesticides such as weather, irrigation, and the presence of children and animals.

Never apply pesticides when rain is predicted within the next 48 hours. Also, do not water after applying pesticides unless the directions say it is necessary.

Apply pesticides when the air is still; breezy conditions may cause the spray or dust to drift away from your targeted area.

In case of an emergency call 911 and/or the regional poison control number at (714) 634-5988 or (800) 544-4404 (CA only).

For general questions you may also visit www.calpoison.org.

Step 6: In the event of accidental spills, sweep up or use an absorbent agent to remove any excess pesticides. Avoid the use of water.

Be prepared. Have a broom, dust pan, or dry absorbent material, such as cat litter, newspapers or paper towels, ready to assist in cleaning up spills.

Contain and clean up the spill right away. Place contaminated materials in a doubled plastic bag. All materials used to clean up the spill should be properly disposed of according to your local Household Hazardous Waste Disposal site.

Step 7: Properly store and dispose of unused pesticides.



Purchase Ready-To-Use (RTU) products to avoid storing large concentrated quantities of pesticides.

Store unused chemicals in a locked cabinet.

Unused pesticide chemicals may be disposed of at a Household Hazardous Waste Collection Center.

Empty pesticide containers should be triple rinsed prior to disposing of them in the trash.

Household Hazardous Waste Collection Center
(714) 834-6752
www.oclandfills.com

PROJECT Pollution PREVENTION

Sewage Spill Regulatory Requirements

Allowing sewage to discharge to a gutter or storm drain may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up efforts.

Here are the pertinent codes, fines, and agency contact information that apply.

Orange County Stormwater Program
24 Hour Water Pollution Reporting Hotline
1-877-89-SPILL (1-877-897-7455)

- County and city water quality ordinances prohibit discharges containing pollutants.

Orange County Health Care Agency Environmental Health
(714) 433-6419

California Health and Safety Code, Sections 5410-5416

- No person shall discharge raw or treated sewage or other waste in a manner that results in contamination, pollution or a nuisance.
- Any person who causes or permits a sewage discharge to any state waters:
  - must immediately notify the local health agency of the discharge.
  - shall reimburse the local health agency for services that protect the public's health and safety (water-contact receiving waters).
  - who fails to provide the required notice to the local health agency is guilty of a misdemeanor and shall be punished by a fine (between $500–$1,000) and/or imprisonment for less than one year.

Regional Water Quality Control Board
Santa Ana Region (951) 782-4130
San Diego Region (858) 467-2952

- Requires the prevention, mitigation, response to and reporting of sewage spills.

California Office of Emergency Services
(800) 852-7550

California Water Code, Article 4, Chapter 4, Sections 13268-13271
California Code of Regulations, Title 23, Division 3, Chapter 9.2, Article 2, Sections 2250-2260

- Any person who causes or permits sewage in excess of 1,000 gallons to be discharged to state waters **shall immediately notify the Office of Emergency Services.**
- Any person who fails to provide the notice required by this section is **guilty of a misdemeanor** and shall be punished by a fine (less than $20,000) and/or imprisonment for not more than one year.

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Sewage Spill
Reference Guide

Your Responsibilities as a Private Property Owner

Residences
Businesses
Homeowner/Condominium Associations
Federal and State Complexes
Military Facilities



Orange County Sanitation District

Health Care Agency
Environmental Health

PROJECT Pollution PREVENTION
www.ocwatersheds.com

This brochure was designed courtesy of the Orange County Sanitation District (OCSD). For additional information, call (714) 962-2411, or visit their website at www.ocsd.com

What is a Sewage Spill?

Sewage spills occur when the wastewater being transported via underground pipes overflows through a manhole, cleanout or broken pipe. Sewage spills can cause health hazards, damage to homes and businesses, and threaten the environment, local waterways and beaches.

Common Causes of Sewage Spills

Grease builds up inside and eventually blocks sewer pipes. Grease gets into the sewer from food establishments, household drains, as well as from poorly maintained commercial grease traps and interceptors.

Structure problems caused by tree roots in the lines, broken/cracked pipes, missing or broken cleanout caps or undersized sewers can cause blockages.

Infiltration and inflow (I/I) impacts pipe capacity and is caused when groundwater or rainwater enters the sewer system through pipe defects and illegal connections.

You Are Responsible for a Sewage Spill Caused by a Blockage or Break in Your Sewer Lines!

Time is of the essence in dealing with sewage spills. You are required to **immediately**:

Control and minimize the spill. Keep spills contained on private property and out of gutters, storm drains and public waterways by shutting off or not using the water.

Use sandbags, dirt and/or plastic sheeting to prevent sewage from entering the storm drain system.

Clear the sewer blockage. Always wear gloves and wash your hands. It is recommended that a plumbing professional be called for clearing blockages and making necessary repairs.

Always notify your city sewer/public works department or public sewer district of sewage spills. If the spill enters the storm drains also notify the Health Care Agency. In addition, if it exceeds 1,000 gallons notify the Office of Emergency Services. Refer to the numbers listed in this brochure.



Overflowing cleanout pipe located on private property

You Could Be Liable

Allowing sewage from your home, business or property to discharge to a gutter or storm drain may subject you to penalties and/or out-of-pocket costs to reimburse cities or public agencies for clean-up and enforcement efforts. See Regulatory Codes & Fines section for pertinent codes and fines that apply.

What to Look For

Sewage spills can be a very noticeable gushing of water from a manhole or a slow water leak that may take time to be noticed. Don't dismiss unaccounted-for wet areas.

Look for:

- Drain backups inside the building.
- Wet ground and water leaking around manhole lids onto your street.
- Leaking water from cleanouts or outside drains.
- Unusual odorous wet areas: sidewalks, external walls or ground/landscape around a building.

Caution

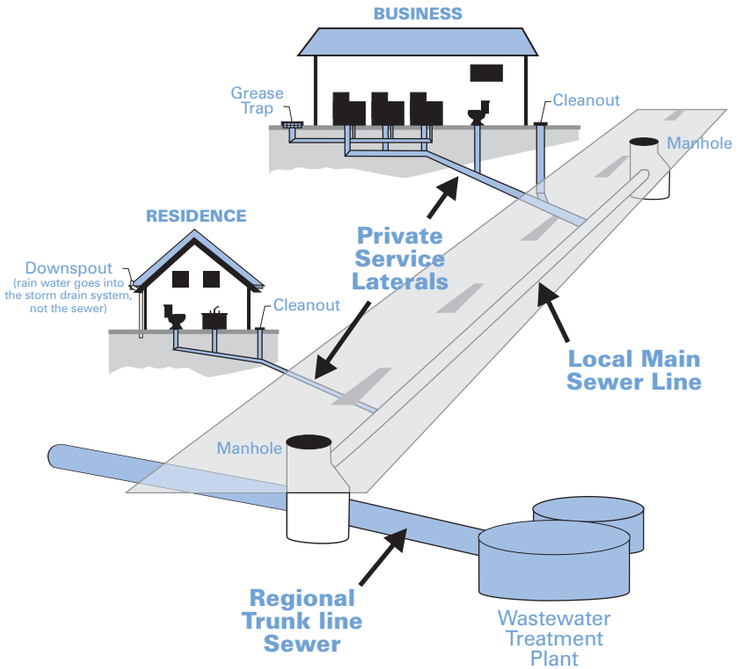
Keep people and pets away from the affected area. Untreated sewage has high levels of disease-causing viruses and bacteria. Call your local health care agency listed on the back for more information.

If You See a Sewage Spill Occurring, Notify Your City Sewer/Public Works Department or Public Sewer District IMMEDIATELY!

How a Sewer System Works

A property owner's sewer pipes are called service laterals and are connected to larger local main and regional trunk lines. Service laterals run from the connection at the home to the connection with the public sewer (including the area under the street). These laterals are the responsibility of the property owner and must be maintained by the property owner. Many city agencies have adopted ordinances requiring maintenance of service laterals. Check with your city sewer/local public works department for more information.

Operation and maintenance of **local and regional sewer lines** are the responsibility of the city sewer/public works departments and public sewer districts.



How You Can Prevent Sewage Spills

1. **Never put grease down garbage disposals, drains or toilets.**
2. **Perform periodic cleaning to eliminate grease, debris and roots in your service laterals.**
3. **Repair any structural problems in your sewer system and eliminate any rainwater infiltration/inflow leaks into your service laterals.**



Preventing Grease Blockages

The drain is not a dump! Recycle or dispose of grease properly and never pour grease down the drain.

Homeowners should mix fats, oils and grease with absorbent waste materials such as paper, coffee grounds, or kitty litter and place it in the trash. Wipe food scraps from plates and pans and dump them in the trash.

Restaurants and commercial food service establishments should always use "Kitchen Best Management Practices." These include:

- Collecting all cooking grease and liquid oil from pots, pans and fryers in covered grease containers for recycling.
- Scraping or dry-wiping excess food and grease from dishes, pots, pans and fryers into the trash.
- Installing drain screens on all kitchen drains.
- Having spill kits readily available for cleaning up spills.
- Properly maintaining grease traps or interceptors by having them serviced regularly. Check your local city codes.

Orange County Agency Responsibilites

- **City Sewer/Public Works Departments—** Responsible for protecting city property and streets, the local storm drain system, sewage collection system and other public areas.
- **Public Sewer/Sanitation District—** Responsible for collecting, treating and disposing of wastewater.
- **County of Orange Health Care Agency—** Responsible for protecting public health by closing ocean/bay waters and may close food-service businesses if a spill poses a threat to public health.
- **Regional Water Quality Control Boards—** Responsible for protecting State waters.
- **Orange County Stormwater Program—** Responsible for preventing harmful pollutants from being discharged or washed by stormwater runoff into the municipal storm drain system, creeks, bays and the ocean.

You Could Be Liable for Not Protecting the Environment

Local and state agencies have legal jurisdiction and enforcement authority to ensure that sewage spills are remedied.

They may respond and assist with containment, relieving pipe blockages, and/or clean-up of the sewage spill, especially if the spill is flowing into storm drains or onto public property.

A property owner may be charged for costs incurred by these agencies responding to spills from private properties.



Report Sewage Spills!

City Sewer/Public Works Departments

Aliso Viejo	(949) 425-2500
Anaheim	(714) 765-6860
Brea	(714) 990-7691
Buena Park	(714) 562-3655
Costa Mesa	(949) 645-8400
Cypress	(714) 229-6760
Dana Point	(949) 248-3562
Fountain Valley	(714) 593-4600
Fullerton	(714) 738-6897
Garden Grove	(714) 741-5375
Huntington Beach	(714) 536-5921
Irvine	(949) 453-5300
Laguna Beach	(949) 497-0765
Laguna Hills	(949) 707-2650
Laguna Niguel	(949) 362-4337
Laguna Woods	(949) 639-0500
La Habra	(562) 905-9792
Lake Forest	(949) 461-3480
La Palma	(714) 690-3310
Los Alamitos	(562) 431-3538
Mission Viejo	(949) 831-2500
Newport Beach	(949) 644-3011
Orange	(714) 532-6480
Orange County	(714) 567-6363
Placentia	(714) 993-8245
Rancho Santa Margarita	(949) 635-1800
San Clemente	(949) 366-1553
San Juan Capistrano	(949) 443-6363
Santa Ana	(714) 647-3380
Seal Beach	(562) 431-2527
Stanton	(714) 379-9222
Tustin	(714) 962-2411
Villa Park	(714) 998-1500
Westminster	(714) 893-3553
Yorba Linda	(714) 961-7170

Public Sewer/Water Districts

Costa Mesa Sanitary District	(714) 393-4433/ (949) 645-8400
El Toro Water District	(949) 837-0660
Emerald Bay Service District	(949) 494-8571
Garden Grove Sanitary District	(714) 741-5375
Irvine Ranch Water District	(949) 453-5300
Los Alamitos/Rossmoor Sewer District	(562) 431-2223
Midway City Sanitary District (Westminster)	(714) 893-3553
Moulton Niguel Water District	(949) 831-2500
Orange County Sanitation District	(714) 962-2411
Santa Margarita Water District	(949) 459-6420
South Coast Water District	(949) 499-4555
South Orange County Wastewater Authority	(949) 234-5400
Sunset Beach Sanitary District	(562) 493-9932
Trabuco Canyon Sanitary District	(949) 858-0277
Yorba Linda Water District	(714) 777-3018

Other Agencies

Orange County Health Care Agency	(714) 433-6419
Office of Emergency Services	(800) 852-7550



Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities can lead to water pollution if you're not careful. Fertilizers, pesticides and other chemicals that are left on yards or driveways can be blown or washed into storm drains that flow to the ocean. Overwatering lawns can also send materials into storm drains. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour gardening products into the ocean, so don't let them enter the storm drains. Follow these easy tips to help prevent water pollution.

The tips contained in this brochure provide useful information to help prevent water pollution while landscaping or gardening.

Additional detailed information is available from the **UCCE Master Gardener Hotline: (714) 708-1646**

To report a spill during normal business hours, please call the **City of Orange Public Works Department** at **(714) 532-6480** or visit **www.cityoforange.org.**

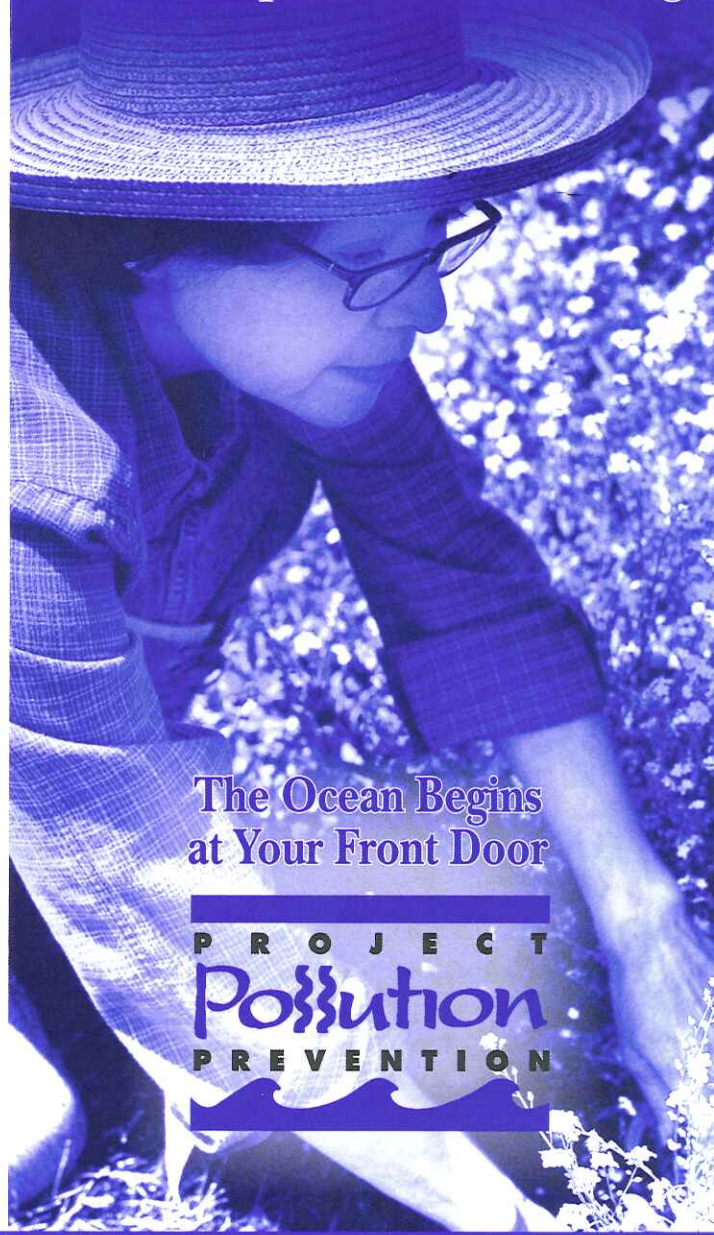
To report a spill after normal business hours, or on weekends, please call the **City of Orange 24-Hour Water Pollution Problem Reporting Hotline** at **(714) 538-1961.**

For emergencies, dial 911.

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Help Prevent Ocean Pollution:

Tips for Landscape & Gardening



The Ocean Begins at Your Front Door

PROJECT Pollution PREVENTION

Tips for Landscape & Gardening

Never allow gardening products or polluted water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.
- Plant native vegetation to reduce the amount of water, fertilizers, and pesticide applied to the landscape.



- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it.



- Use slow-release fertilizers to minimize leaching, and use organic fertilizers.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.



- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting. For more information, visit **www.ipm.ucdavis.edu**.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Hazardous Waste Collection Center to be recycled. Locations are provided below.

Household Hazardous Waste Collection Centers

Anaheim:	1071 N. Blue Gum St.
Huntington Beach:	17121 Nichols St.
Irvine:	6411 Oak Canyon
San Juan Capistrano:	32250 La Pata Ave.

For more information, call (714) 834-6752 or visit www.oclandfills.com



For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

To report a spill,
call the
Orange County 24-Hour Water Pollution Problem Reporting Hotline
at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

Tips for Residential Pool, Landscape and Hardscape Drains



The Ocean Begins at Your Front Door

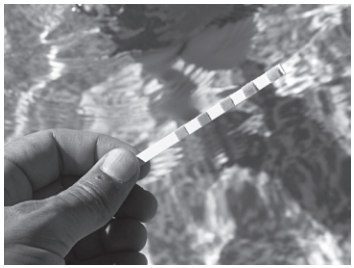
PROJECT Pollution PREVENTION

Tips for Residential Pool, Landscape and Hardscape Drains

Pool Maintenance

All pool water discharged to the curb, gutter or permitted pool drain from your property must meet the following water quality criteria:

- The residual chlorine does not exceed 0.1 mg/L (parts per million).
- The pH is between 6.5 and 8.5.
- The water is free of any unusual coloration.
- There is no discharge of filter media or acid cleaning wastes.



Some cities have ordinances that do not allow pool water to be discharged to the storm drain. Check with your city.

Landscape and Hardscape Drains

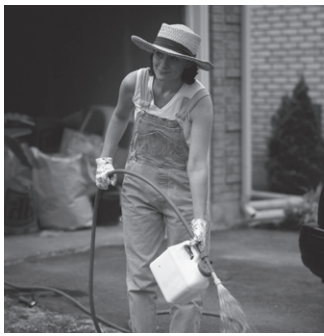
The following recommendations will help reduce or prevent pollutants from your landscape and hardscape drains from entering the street, gutter or storm drain. Unlike water that enters the sewer (from sinks and toilets), water that enters a landscape or hardscape drain is not treated before entering our creeks, rivers, bays and ocean.

Household Activities

- Do not rinse spills of materials or chemicals to any drain.
- Use dry cleanup methods such as applying cat litter or another absorbent material, then sweep it up and dispose of it in the trash. If the material is hazardous, dispose of it at a Household Hazardous Waste Collection Center (HHWCC). For locations, call **(714) 834-6752** or visit **www.oclandfills.com**.
- Do not hose down your driveways, sidewalks or patios to your landscape or hardscape drain. Sweep up debris and dispose of it in the trash.
- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash.
- Do not store items such as cleaners, batteries, automotive fluids, paint products, TVs, or computer monitors uncovered outdoors. Take them to a HHWCC for disposal.

Yard Maintenance

- Do not overwater. Water by hand or set automated irrigation systems to reflect seasonal water needs.
- Follow directions on pesticides and fertilizers (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Cultivate your garden often to control weeds and reduce the need to use chemicals.



Vehicle Maintenance

- Never pour oil or antifreeze down your landscape or hardscape drain. Recycle these substances at a service station, a waste collection center or used oil recycling center. For locations, contact the Used Oil Program at **1-800-CLEANUP** or visit **www.CLEANUP.org**.
- Whenever possible, take your vehicle to a commercial car wash.
- If you do wash your vehicle at home, do not allow the washwater to go down your landscape or hardscape drain. Instead, dispose of it in the sanitary sewer (a sink or toilet) or onto an absorbent surface such as your lawn.
- Use a spray nozzle that will shut off the water when not in use.





Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many common activities such as painting can lead to water pollution if you're not careful. Paint must be used, stored and disposed of properly to ensure that it does not enter the street, gutter or storm drain. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never dump paint into the ocean, so don't let it enter the storm drains. Follow these easy tips to help prevent water pollution.

For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

To report a spill,
call the
Orange County 24-Hour Water Pollution Problem Reporting Hotline
at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.

The tips contained in this brochure provide useful information to help prevent water pollution while using, storing and disposing of paint. If you have other suggestions, please contact your city's stormwater representatives or call the Orange County Stormwater Program.

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Help Prevent Ocean Pollution:

Tips for Projects Using Paint



Tips for Projects Using Paint

Paint can cause significant damage to our environment. Whether you hire a contractor or do it yourself, it is important to follow these simple tips when purchasing, using, cleaning, storing and disposing of paint.

Purchasing Paint

- Measure the room or object to be painted, then buy only the amount needed.
- Whenever possible, use water-based paint since it usually does not require hazardous solvents such as paint thinner for cleanup.

Painting

- Use only one brush or roller per color of paint to reduce the amount of water needed for cleaning.
- Place open paint containers or trays on a stable surface and in a position that is unlikely to spill.
- Always use a tarp under the area or object being painted to collect paint drips and contain spills.

Cleaning

- Never clean brushes or rinse paint containers in the street, gutter or storm drain.
- For oil-based products, use as much of the paint on the brushes as possible. Clean brushes with thinner. To reuse thinner, pour it through a fine filter (e.g. nylon, metal gauze or filter paper) to remove solids such as leftover traces of paint.
- For water-based products, use as much of the paint on the brushes as possible, then rinse in the sink.
- Collect all paint chips and dust. Chips and dust from marine paints or paints containing lead, mercury or tributyl tin are hazardous waste. Sweep up and dispose of at a Household Hazardous Waste Collection Center (HHWCC).

Storing Paint

- Store paint in a dry location away from the elements.
- Store leftover water-based paint, oil-based paint and solvents separately in original or clearly marked containers.
- Avoid storing paint cans directly on cement floors. The bottom of the can will rust much faster on cement.
- Place the lid on firmly and store the paint can upside-down to prevent air from entering. This will keep the paint usable longer. Oil-based paint is usable for up to 15 years. Water-based paint remains usable for up to 10 years.

Alternatives to Disposal

- Use excess paint to apply another coat, for touch-ups, or to paint a closet, garage, basement or attic.
- Give extra paint to friends or family. Extra paint can also be donated to a local theatre group, low-income housing program or school.
- Take extra paint to an exchange program such as the **"Stop & Swap"** that allows you to drop off or pick up partially used home care products free of charge. **"Stop & Swap"** programs are available at most HHWCCs.
- For HHWCC locations and hours, call **(714) 834-6752** or visit **www.oclandfills.com**.



Disposing of Paint

- Never put wet paint in the trash.

For water-based paint:

- If possible, brush the leftover paint on cardboard or newspaper. Otherwise, allow the paint to dry in the can with the lid off in a well-ventilated area protected from the elements, children and pets. Stirring the paint every few days will speed up the drying.
- Large quantities of extra paint should be taken to a HHWCC.
- Once dried, paint and painted surfaces may be disposed of in the trash. When setting a dried paint can out for trash collection, leave the lid off so the collector will see that the paint has dried.

For oil-based paint:

- Oil-based paint is a household hazardous waste. All leftover paint should be taken to a HHWCC.

Aerosol paint:

- Dispose of aerosol paint cans at a HHWCC.

Spills

- Never hose down pavement or other impermeable surfaces where paint has spilled.
- Clean up spills immediately by using an absorbent material such as cat litter. Cat litter used to clean water-based paint spills can be disposed of in the trash. When cleaning oil-based paint spills with cat litter, it must be taken to a HHWCC.
- Immediately report spills that have entered the street, gutter or storm drain to the County's 24-Hour Water Pollution Problem Reporting Hotline at **(714) 567-6363** or visit **www.ocwatersheds.com** to fill out an incident reporting form.

PROJECT Pollution PREVENTION

Site Design & Landscape Planning SD-10



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Roof Runoff Controls SD-11



Rain Garden

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Description

Various roof runoff controls are available to address stormwater that drains off rooftops. The objective is to reduce the total volume and rate of runoff from individual lots, and retain the pollutants on site that may be picked up from roofing materials and atmospheric deposition. Roof runoff controls consist of directing the roof runoff away from paved areas and mitigating flow to the storm drain system through one of several general approaches: cisterns or rain barrels; dry wells or infiltration trenches; pop-up emitters, and foundation planting. The first three approaches require the roof runoff to be contained in a gutter and downspout system. Foundation planting provides a vegetated strip under the drip line of the roof.

Approach

Design of individual lots for single-family homes as well as lots for higher density residential and commercial structures should consider site design provisions for containing and infiltrating roof runoff or directing roof runoff to vegetative swales or buffer areas. Retained water can be reused for watering gardens, lawns, and trees. Benefits to the environment include reduced demand for potable water used for irrigation, improved stormwater quality, increased groundwater recharge, decreased runoff volume and peak flows, and decreased flooding potential.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Designing New Installations

Cisterns or Rain Barrels

One method of addressing roof runoff is to direct roof downspouts to cisterns or rain barrels. A cistern is an above ground storage vessel with either a manually operated valve or a permanently open outlet. Roof runoff is temporarily stored and then released for irrigation or infiltration between storms. The number of rain

barrels needed is a function of the rooftop area. Some low impact developers recommend that every house have at least 2 rain barrels, with a minimum storage capacity of 1000 liters. Roof barrels serve several purposes including mitigating the first flush from the roof which has a high volume, amount of contaminants, and thermal load. Several types of rain barrels are commercially available. Consideration must be given to selecting rain barrels that are vector proof and childproof. In addition, some barrels are designed with a bypass valve that filters out grit and other contaminants and routes overflow to a soak-away pit or rain garden.

If the cistern has an operable valve, the valve can be closed to store stormwater for irrigation or infiltration between storms. This system requires continual monitoring by the resident or grounds crews, but provides greater flexibility in water storage and metering. If a cistern is provided with an operable valve and water is stored inside for long periods, the cistern must be covered to prevent mosquitoes from breeding.

A cistern system with a permanently open outlet can also provide for metering stormwater runoff. If the cistern outlet is significantly smaller than the size of the downspout inlet (say ¼ to ½ inch diameter), runoff will build up inside the cistern during storms, and will empty out slowly after peak intensities subside. This is a feasible way to mitigate the peak flow increases caused by rooftop impervious land coverage, especially for the frequent, small storms.

Dry wells and Infiltration Trenches

Roof downspouts can be directed to dry wells or infiltration trenches. A dry well is constructed by excavating a hole in the ground and filling it with an open graded aggregate, and allowing the water to fill the dry well and infiltrate after the storm event. An underground connection from the downspout conveys water into the dry well, allowing it to be stored in the voids. To minimize sedimentation from lateral soil movement, the sides and top of the stone storage matrix can be wrapped in a permeable filter fabric, though the bottom may remain open. A perforated observation pipe can be inserted vertically into the dry well to allow for inspection and maintenance.

In practice, dry wells receiving runoff from single roof downspouts have been successful over long periods because they contain very little sediment. They must be sized according to the amount of rooftop runoff received, but are typically 4 to 5 feet square, and 2 to 3 feet deep, with a minimum of 1-foot soil cover over the top (maximum depth of 10 feet).

To protect the foundation, dry wells must be set away from the building at least 10 feet. They must be installed in solids that accommodate infiltration. In poorly drained soils, dry wells have very limited feasibility.

Infiltration trenches function in a similar manner and would be particularly effective for larger roof areas. An infiltration trench is a long, narrow, rock-filled trench with no outlet that receives stormwater runoff. These are described under Treatment Controls.

Pop-up Drainage Emitter

Roof downspouts can be directed to an underground pipe that daylights some distance from the building foundation, releasing the roof runoff through a pop-up emitter. Similar to a pop-up irrigation head, the emitter only opens when there is flow from the roof. The emitter remains flush to the ground during dry periods, for ease of lawn or landscape maintenance.

Foundation Planting

Landscape planting can be provided around the base to allow increased opportunities for stormwater infiltration and protect the soil from erosion caused by concentrated sheet flow coming off the roof. Foundation plantings can reduce the physical impact of water on the soil and provide a subsurface matrix of roots that encourage infiltration. These plantings must be sturdy enough to tolerate the heavy runoff sheet flows, and periodic soil saturation.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Supplemental Information

Examples

- City of Ottawa's Water Links Surface –Water Quality Protection Program
- City of Toronto Downspout Disconnection Program
- City of Boston, MA, Rain Barrel Demonstration Program

Other Resources

Hager, Marty Catherine, Stormwater, "Low-Impact Development", January/February 2003. www.stormh2o.com

Low Impact Urban Design Tools, Low Impact Development Design Center, Beltsville, MD. www.lid-stormwater.net

Start at the Source, Bay Area Stormwater Management Agencies Association, 1999 Edition

Efficient Irrigation SD-12



Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Trash Storage Areas SD-32

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☑ Contain Pollutants
- Collect and Convey

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Additional Information

Maintenance Considerations

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Appendix B
Regional Stream Susceptibility Map

PRELIMINARY MAP
SUBJECT TO FURTHER REVISION

Susceptibility

- Potential Areas of Erosion, Habitat, & Physical Structure Susceptibility

Channel Type

- Earth (Unstable)
- Earth (Stabilized)
- Stabilized

Tidel Influence

- <= Mean High Water Line (4.28')

Water Body

- Basin
- Lake
- Reservoir

Other Lands

- Airports/Military

Los Angeles County

Orange County

Anaheim
Bay-Huntington
Harbor Watershed

Santa Ana
River
Watershed

SITE

Fullerton Airport

Los Alamitos Naval Air Station

Seal Beach Naval Weapons Station

HUMBLE RESERVOIR
VALENCIA RESERVOIR
BREA CREEK RESERVOIR
LOFTUS DIVERSION CHANNEL DESILTING BASIN
FULLERTON RESERVOIR
HILLCREST PARK RESERVOIR
MILLER RETARDING BASIN
KRAEMER BASIN
LA JOLLA RECHARGE BASIN
PLACENTIA RETARDING BASIN
RAYMOND RETARDING BASIN
GILBERT RETARDING BASIN
CRESCENT RETARDING BASIN
CYPRESS RETARDING BASIN
ROSSMOOR RETARDING BASIN
LOS ALAMITOS RETARDING BASIN

0 4,000 8,000 16,000 Feet

TITLE
SUSCEPTIBILITY ANALYIS
SAN GABRIEL-COYOTE CREEK

JOB
ORANGE COUNTY
WATERSHED
MASTER PLANNING
ORANGE CO. CA

SCALE	1" = 4000'
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	9526-E

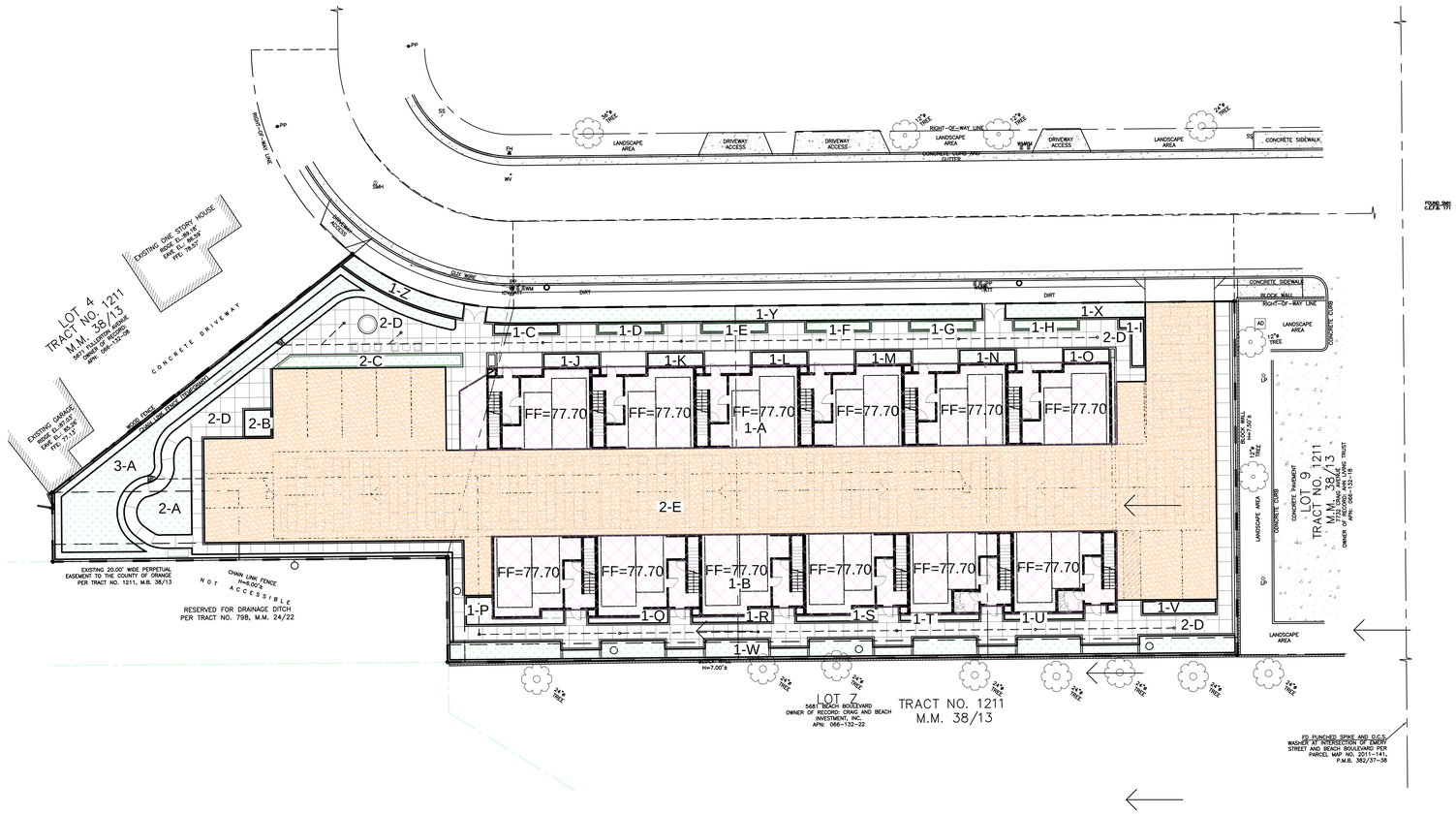
PACE
Advanced Water Engineering

FIGURE
XVI-3a

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-3a_SanGabrielCoyoteCreekWatershedSuceptability_20100331.mxd

Appendix C

WQMP Exhibit



ID	DESCRIPTION	PERVIOUS	IMPERVIOUS
		SF	SF
1-A	ROOF		4,415
1-B	ROOF		4,415
1-C	LANDSCAPE	46	
1-D	LANDSCAPE	46	
1-E	LANDSCAPE	46	
1-F	LANDSCAPE	46	
1-G	LANDSCAPE	46	
1-H	LANDSCAPE	46	
1-I	LANDSCAPE	56	
1-J	LANDSCAPE	61	
1-K	LANDSCAPE	61	
1-L	LANDSCAPE	61	
1-M	LANDSCAPE	61	
1-N	LANDSCAPE	61	
1-O	LANDSCAPE	50	
1-P	LANDSCAPE	109	
1-Q	LANDSCAPE	53	
1-R	LANDSCAPE	53	
1-S	LANDSCAPE	53	
1-T	LANDSCAPE	38	
1-U	LANDSCAPE	38	
1-V	LANDSCAPE	74	
1-W	LANDSCAPE	945	
1-X	LANDSCAPE	176	
1-Y	LANDSCAPE	625	
1-Z	LANDSCAPE	161	
2-A	LANDSCAPE	254	
2-B	LANDSCAPE	59	
2-C	LANDSCAPE	153	
2-D	CONC.		5,903
2-E	PERMEABLE PAVER	10,339	
3-A	BIO-RETENTION W UNDERDRAIN	1,564	
	TOTAL	**15,381**	**14,733**
	ACEREAGE	**0.35**	**0.34**
	% IMP	**0.51**	**0.49**

PRE DEVELOPMENT
TOTAL SITE AREA = 30,114SF / 0.69 AC
IMPERVIOUS = 902 SF/0.02 AC
PERVIOUS = 29,212 SF/0.67 AC

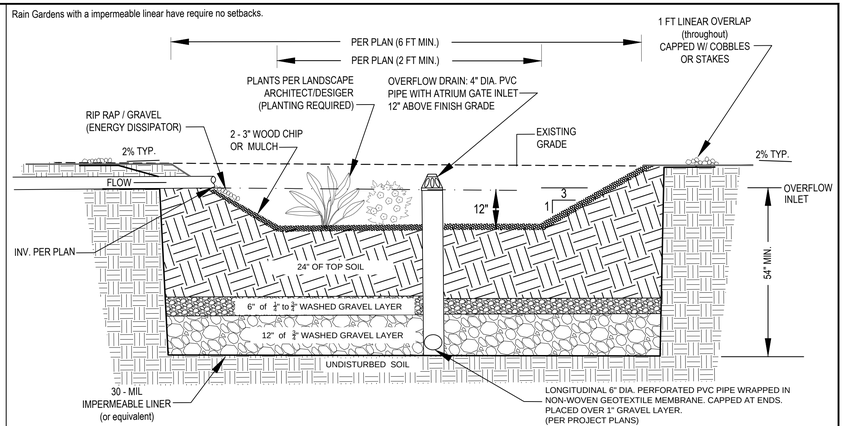
LEGEND

- LANDSCAPE
- PERMEABLE PAVEMENT
- ROOF
- CONCRETE
- DRAINAGE DIRECTION
- RD - ROOF DRAIN

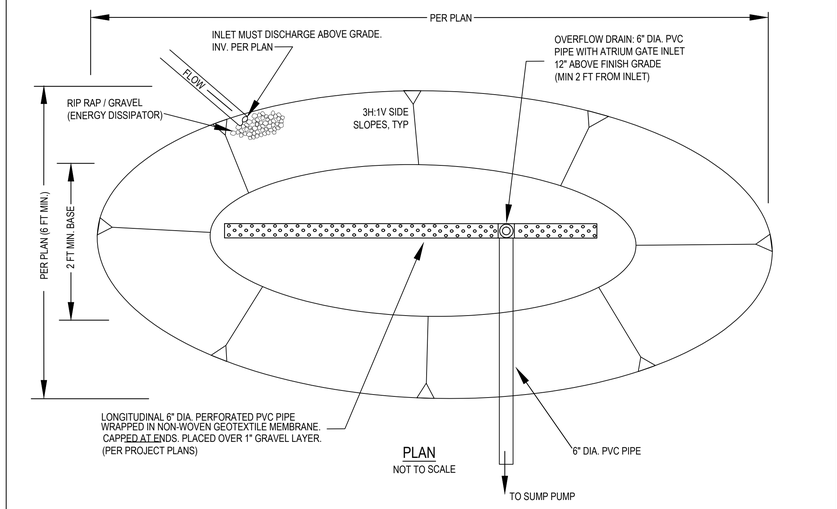
LID/DCV = 1,167 CF
PROVIDED PLANTER BOX = 793 SF

NO DUMPING
DRAINS TO OCEAN

Rain Gardens with a impermeable linear have require no setbacks.

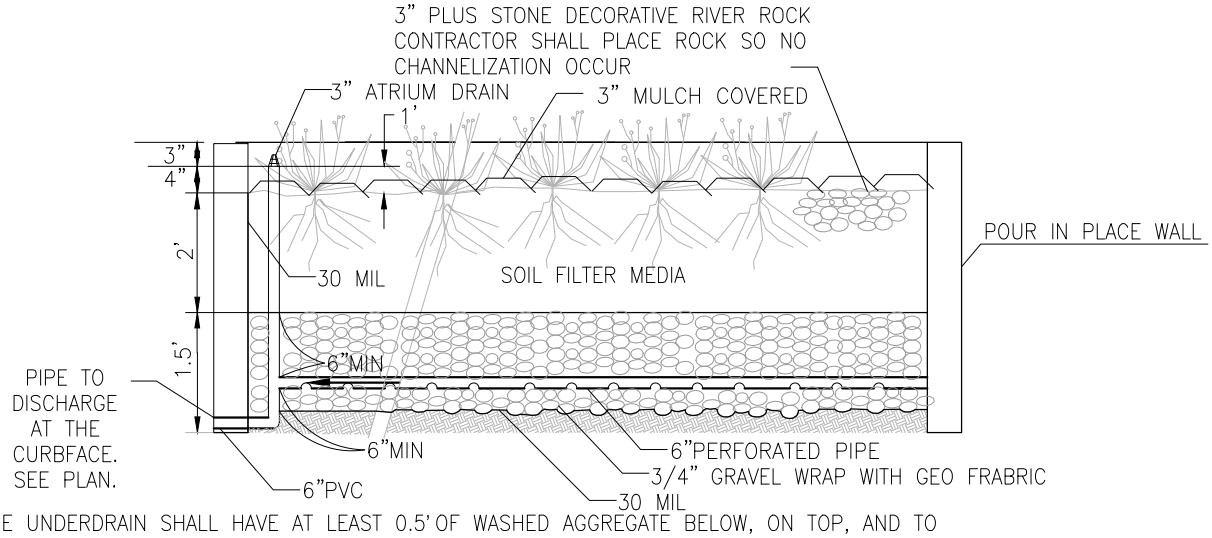


SECTION
NOT TO SCALE



PLAN
NOT TO SCALE

WQMP EXHIBIT
FOR
CRAIG APARTMENT
7682, 7692, 7712, 7722 CRAIG AVE BUENA PARK, CA 90621



– THE UNDERDRAIN SHALL HAVE AT LEAST 0.5' OF WASHED AGGREGATE BELOW, ON TOP, AND TO THE SIDES OF THE UNDERDRAIN PIPES.

– THE PLANTING MEDIA PLACED IN THE CELL SHALL BE DESIGNED PER THE RECOMMENDATIONS CONTAINED IN TGD FACT SHEET MISC–1: PLANTING/STORAGE MEDIA

– PLANT MATERIALS SHOULD BE TOLERANT OF SUMMER DROUGHT, PONDING FLUCTUATIONS, AND SATURATED SOIL CONDITIONS FOR 48 HOURS; NATIVE PLACE SPECIES AND/OR HARDY CULTIVARS THAT ARE NOT INVASIVE AND DO NOT REQUIRE CHEMICAL INPUTS SHOULD BE USED TO THE MAXIMUM EXTENT FEASIBLE

– IRRIGATION IS PER THE LANDSCAPE ARCHITECT/DESIGNER.

BIO-RETENTION WITH UNDERDRAIN DETAIL

N.T.S.

XIV.2. Miscellaneous BMP Design Element Fact Sheets (MISC)

MISC-1: Planting/Storage Media

Planting and storage media is a critical design element for several common BMP types, including bioretention, bioinfiltration, swales, filter strips, and greenroofs. This fact sheet is intended to be used as referenced from these fact sheets.

Also known as:

- *Bioretention soil media (BSM)*



Street-end biofiltration with planting/storage media
Source: City of Portland

General Design Criteria

- Planting/storage media should be designed to achieve the long term hydraulic design requirements associated with the design of the facility (i.e., design K_{sat}).
- The planting media shall be designed to address pollutants of concern at the design hydraulic capacity.
- Bioretention soil shall also support vigorous plant growth.
- Planting media should consist of 60 to 80% fine sand and 20 to 40% compost.
- Planting media for projects draining to nutrient sensitive receiving water should adhere to recommendations for nutrient sensitive planting media provided below.

Sand

- Sand should be free of wood, waste, coating such as clay, stone dust, carbonate, etc., or any other deleterious material. All aggregate passing the No. 200 sieve size should be non-plastic. Sand for bioretention should be analyzed by an accredited lab using #200, #100, #40, #30, #16, #8, #4, and 3/8 sieves (ASTM D 422 or as approved by the local permitting authority) and meet the following gradation (Note: all sands complying with ASTM C33 for fine aggregate comply with the gradation requirements below):

Sieve Size (ASTM D422)	% Passing (by weight)	
	Minimum	Maximum
3/8 inch	100	100
#4	90	100
#8	70	100
#16	40	95
#30	15	70
#40	5	55
#100	0	15
#200	0	5

- Note: the gradation of the sand component of the media is believed to be a major factor in the hydraulic conductivity of the media mix. If the desired hydraulic conductivity of the media cannot be achieved within the specified proportions of sand and compost (#2), then it may be necessary to utilize sand at the coarser end of the range specified in the table above ("minimum" column).

Compost

Compost should be a well decomposed, stable, weed free organic matter source derived from waste materials including yard debris, wood wastes, or other organic materials not including manure or biosolids meeting standards developed by the US Composting Council (USCC). The product shall be certified through the USCC Seal of Testing Assurance (STA) Program (a compost testing and information disclosure program). Compost quality should be verified via a lab analysis to be:

- Feedstock materials shall be specified and include one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
- Organic matter: 35-75% dry weight basis.
- Carbon and Nitrogen Ratio: 15:1 < C:N < 25:1
- Maturity/Stability: shall have dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120 F) upon delivery or rewetting is not acceptable.
- Toxicity: any one of the following measures is sufficient to indicate non-toxicity:
    - NH4:NH3 < 3
    - Ammonium < 500 ppm, dry weight basis
    - Seed Germination > 80% of control
    - Plant trials > 80% of control
- Solvita® > 5 index value
- Nutrient content:
    - Total Nitrogen content 0.9% or above preferred
    - Total Boron should be <80 ppm, soluble boron < 2.5 ppm
- Salinity: < 6.0 mmhos/cm
- pH between 6.5 and 8 (may vary with plant palette)
- Compost for bioretention should be analyzed by an accredited lab using #200, ¼ inch, ½ inch, and 1 inch sieves (ASTM D 422 or as approved by the local permitting authority) and meet the following gradation:

Sieve Size (ASTM D422)	% Passing (by weight)	
	Minimum	Maximum
1 inch	99	100
½ inch	90	100
¼ inch	40	90
#200	2	10

- Tests should be sufficiently recent to represent the actual material that is anticipated to be delivered to the site. If processes or sources used by the supplier have changed significantly since the most recent testing, new tests should be requested.
- Note: the gradation of compost used in bioretention media is believed to play an important role in the saturated hydraulic conductivity of the media. To achieve a higher saturated hydraulic conductivity, it may be necessary to utilize compost at the coarser end of this range ("minimum" column). The percent passing the #200 sieve (fines) is believed to be the most important factor in hydraulic conductivity. In addition, a coarser compost mix provides more heterogeneity of the bioretention media, which is believed to be advantageous for more rapid development of soil structure needed to support health biological processes. This may be an advantage for plant establishment with lower nutrient and water input.

Mulch

- Planting area should generally be covered with 2 to 4 inches (average 3 inches) of mulch at the start and an additional placement of 1 to 2 inches of mulch should be added annually. *The intention is that to help sustain the nutrient levels, suppress weeds, retain moisture, and maintain infiltration capacity*.
- For nutrient-sensitive planting/storage media design, inorganic mulch such as gravel, may be used.

Planting/Storage Media Design for Nutrient Sensitive Receiving Waters

Where the BMP discharges to receiving waters with nutrient impairments or nutrient TMDLs, the planting media placed should be designed with the specific goal of minimizing the potential for initial and long term leaching of nutrients from the media.

- In general, the potential for leaching of nutrients can be minimized by:
  - Utilizing stable, aged compost (as required of media mixes under all conditions).
  - Utilizing other sources of organic matter, as appropriate, that are safe, non-toxic, and have lower potential for nutrient leaching than compost.
  - Reducing the content of compost or other organic material in the media mix to the minimum amount necessary to support vigorous plant growth and healthy biological processes.
- A landscape architect should be consulted to assist in the design of planting/storage media to balance the interests of plant establishment, water retention capacity (irrigation demand), and the potential for nutrient leaching. The following practices should be considered in developing the media mix design:
  - The actual nutrient content and organic content of the selected compost source should be considered when specifying the proportions of compost and sand. The compost specification allows a range of organic content over approximately a factor of 2 and nutrient content may vary more widely. Therefore determining the actual organic content and nutrient content of the compost expected to be supplied is important in determining the proportion to be used for amendment.
  - A commitment to periodic soil testing for nutrient content and a commitment to adaptive management of nutrient levels can help reduce the amount of organic amendment that must be provided initially. Generally, nutrients can be added planting areas through the addition of organic mulch, but cannot be removed.
  - Plant palettes and the associated planting mix should be designed with native plants where possible. Native plants generally have a broader tolerance for nutrient content, and can be longer lived in leaner/lower nutrient soils. An additional benefit of lower nutrient levels is that native plants will generally have less competition from weeds.

- Nutrients are better retained in soils with higher cation exchange capacity (CEC). CEC can be increased through selection of organic material with naturally high CEC, such as peat, and/or selection of inorganic material with high CEC such as some sands or engineered minerals (e.g., low P-index sands, zeolites, rhyolites, etc). Including higher CEC materials would tend to reduce the net leaching of nutrients.
- Soil structure can be more important than nutrient content in plant survival and biologic health of the system. If a good soil structure can be created with very low amounts of compost, plants survivability should still be provided. Soil structure is loosely defined as the ability of the soil to conduct and store water and nutrients as well as the degree of aeration of the soil. While soil structure generally develops with time, planting/storage media can be designed to promote earlier development of soil structure. Soil structure is enhanced by the use of amendments with high hummus content (as found in well-aged organic material). In addition, soil structure can be enhanced through the use of compost/organic material with a distribution of particle sizes (i.e., a more heterogeneous mix). Finally, inorganic amendments such as polymer beads may be useful for promoting aeration and moisture retention associated with a good soil structure. An example of engineered soil to promote soil structure can be found here:

  http://www.hort.cornell.edu/uhi/outreach/pdfs/custructuralsoilwebpdf.pdf
- Younger plants are generally more tolerant of lower nutrient levels and tend to help develop soil structure as they grow. Starting plants from smaller transplants can help reduce the need for organic amendments and improve soil structure. The project should be able to accept a plant mortality rate that is somewhat higher than starting from larger plants and providing high organic content.

- With these considerations, it is anticipated that less than 10 percent compost amendment could be used, while still balancing plant survivability and water retention.

We wish to express our gratitude to following individuals for their feedback on the design of planting/storage media for nutrient sensitive receiving waters in Southern California.

Deborah Deets, City of Los Angeles Bureau of Sanitation

Drew Ready, LA and San Gabriel Rivers Watershed Council

Rick Fisher, ASLA, City of Los Angeles Bureau of Engineering

Dr. Garn Wallace, Wallace Laboratories

Glen Dake, GDML

Jason Schmidt, Tree People

The guidance provided herein does not reflect the individual opinions of any individual listed above and should not be cited or otherwise attributed to those listed.

Selecting Plants for Planting/Storage Media

- Plant materials should be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 48 to 96 hours.
- It is recommended that a minimum of three types of tree, shrubs, and/or herbaceous groundcover species be incorporated to protect against facility failure due to disease and insect infestations of a single species.
- Native plant species and/or hardy cultivars that are not invasive and do not require chemical inputs should be used to the maximum extent feasible.

XIV.5. Biotreatment BMP Fact Sheets (BIO)

Conceptual criteria for biotreatment BMP selection, design, and maintenance are contained in **Appendix XII**. These criteria are generally applicable to the design of biotreatment BMPs in Orange County and BMP-specific guidance is provided in the following fact sheets.

Note: Biotreatment BMPs shall be designed to provide the maximum feasible infiltration and ET based on criteria contained in ***Appendix XI.2****.*

BIO-1: Bioretention with Underdrains

Bioretention stormwater treatment facilities are landscaped shallow depressions that capture and filter stormwater runoff. These facilities function as a soil and plant-based filtration device that removes pollutants through a variety of physical, biological, and chemical treatment processes. The facilities normally consist of a ponding area, mulch layer, planting soils, and plants. As stormwater passes down through the planting soil, pollutants are filtered, adsorbed, biodegraded, and sequestered by the soil and plants. Bioretention with an underdrain are utilized for areas with low permeability native soils or steep slopes where the underdrain system that routes the treated runoff to the storm drain system rather than depending entirely on infiltration. **Bioretention must be designed without an underdrain** in areas of high soil permeability.

Also known as:

- *Rain gardens with underdrains*
- *Vegetated media filter*
- *Downspout planter boxes*



Bioretention
Source: Geosyntec Consultants

Feasibility Screening Considerations

- If there are no hazards associated with infiltration (such as groundwater concerns, contaminant plumes or geotechnical concerns), **bioinfiltration facilities**, which achieve partial infiltration, should be used to maximize infiltration.
- Bioretention with underdrain facilities should be lined if contaminant plumes or geotechnical concerns exist. If high groundwater is the reason for infiltration infeasibility, bioretention facilities with underdrains do not need to be lined.

Opportunity Criteria

- Land use may include commercial, residential, mixed use, institutional, and subdivisions. Bioretention may also be applied in parking lot islands, cul-de-sacs, traffic circles, road shoulders, road medians, and next to buildings in planter boxes.
- Drainage area is ≤ 5 acres.
- Area is available for infiltration.

- Site must have adequate relief between land surface and the stormwater conveyance system to permit vertical percolation through the soil media and collection and conveyance in underdrain to stormwater conveyance system.

OC-Specific Design Criteria and Considerations

- Ponding depth should not exceed 18 inches; fencing may be required if ponding depth is greater than 6 inches to mitigate drowning.
- The minimum soil depth is 2 feet (3 feet is preferred).
- The maximum drawdown time of the bioretention ponding area is 48 hours. The maximum drawdown time of the planting media and gravel drainage layer is 96 hours, if applicable.
- Infiltration pathways may need to be restricted due to the close proximity of roads, foundations, or other infrastructure. A geomembrane liner, or other equivalent water proofing, may be placed along the vertical walls to reduce lateral flows. This liner should have a minimum thickness of 30 mils.
- If infiltration in bioretention location is hazardous due to groundwater or geotechnical concerns, a geomembrane liner must be installed at the base of the bioretention facility. This liner should have a minimum thickness of 30 mils.
- The planting media placed in the cell shall be designed per the recommendations contained in MISC-1: Planting/Storage Media
- Plant materials should be tolerant of summer drought, ponding fluctuations, and saturated soil conditions for 48 hours; native place species and/or hardy cultivars that are not invasive and do not require chemical inputs should be used to the maximum extent feasible
- The bioretention area should be covered with 2-4 inches (average 3 inches) or mulch at the start and an additional placement of 1-2 inches of mulch should be added annually.
- Underdrain should be sized with a 6 inch minimum diameter and have a 0.5% minimum slope. Underdrain should be slotted polyvinyl chloride (PVC) pipe; underdrain pipe should be more than 5 feet from tree locations (if space allows).
- A gravel blanket or bedding is required for the underdrain pipe(s). At least 0.5 feet of washed aggregate must be placed below, to the top, and to the sides of the underdrain pipe(s).
- An overflow device is required at the top of the bioretention area ponding depth.
- Dispersed flow or energy dissipation (i.e. splash rocks) for piped inlets should be provided at basin inlet to prevent erosion.
- Ponding area side slopes shall be no steeper than 3:1 (H:V) unless designed as a planter box BMP with appropriate consideration for trip and fall hazards.

Simple Sizing Method for Bioretention with Underdrain

If the Simple Design Capture Volume Sizing Method described in **Appendix III.3.1** is used to size a bioretention with underdrain facility, the user selects the basin depth and then determines the appropriate surface area to capture the DCV. The sizing steps are as follows:

Step 1: Determine DCV

Calculate the DCV using the Simple Design Capture Volume Sizing Method described in **Appendix III.3.1**.

Step 2: Verify that the Ponding Depth will Draw Down within 48 Hours

The ponding area drawdown time can be calculated using the following equation:

$DD_P = (d_P / K_{MEDIA}) \times 12$ in/ft

Where:

DD_P = time to drain ponded water, hours

d_P = depth of ponding above bioretention area, ft (not to exceed 1.5 ft)

K_{MEDIA} = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; K_{MEDIA} of 2.5 in/hr should be used unless other information is available)

If the drawdown time exceeds 48 hours, adjust ponding depth and/or media infiltration rate until 48 hour drawdown time is achieved.

Step 3: Determine the Depth of Water Filtered During Design Capture Storm

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

$d_{FILTERED}$ = Minimum [$((K_{MEDIA} \times T_{ROUTING})/12)$, d_P]

Where:

$d_{FILTERED}$ = depth of water that may be considered to be filtered during the design storm event, ft

K_{MEDIA} = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; K_{MEDIA} of 2.5 in/hr should be used unless other information is available)

$T_{ROUTING}$ = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3 hours. If the designer desires to account for further routing effects, the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs (See **Appendix III.3.2**) should be used.

d_P = depth of ponding above bioretention area, ft (not to exceed 1.5 ft)

Step 4: Determine the Facility Surface Area

$A = DCV / (d_P + d_{FILTERED})$

Where:

A = required area of bioretention facility, sq-ft

DCV = design capture volume, cu-ft

$d_{FILTERED}$ = depth of water that may be considered to be filtered during the design storm event, ft

d_P = depth of ponding above bioretention area, ft (not to exceed 1.5 ft)

Capture Efficiency Method for Bioretention with Underdrains

If the bioretention geometry has already been defined and the user wishes to account more explicitly for routing, the user can determine the required footprint area using the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs (See **Appendix III.3.2**) to determine the fraction of the DCV that must be provided to manage 80 percent of average annual runoff volume. This method accounts for drawdown time different than 48 hours.

Step 1: Determine the drawdown time associated with the selected basin geometry

$DD = (d_p / K_{DESIGN}) \times 12$ in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

d_P = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

K_{DESIGN} = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise proposed)

If drawdown is less than 3 hours, the drawdown time should be rounded to 3 hours or the Capture Efficiency Method for Flow-based BMPs (See **Appendix III.3.3**) shall be used.

Step 2: Determine the Required Adjusted DCV for this Drawdown Time

Use the Capture Efficiency Method for Volume-Based, Constant Drawdown BMPs (See **Appendix III.3.2**) to calculate the fraction of the DCV the basin must hold to achieve 80 percent capture of average annual stormwater runoff volume based on the basin drawdown time calculated above.

Step 3: Determine the Basin Infiltrating Area Needed

The required infiltrating area (i.e. the surface area of the top of the media layer) can be calculated using the following equation:

A = Design Volume / d_p

Where:

A = required infiltrating area, sq-ft (measured at the media surface)

Design Volume = fraction of DCV, adjusted for drawdown, cu-ft (see Step 2)

d_p = ponding depth of water stored in bioretention area, ft (from Step 1)

This does not include the side slopes, access roads, etc. which would increase bioretention footprint. If the area required is greater than the selected basin area, adjust surface area or adjust ponding depth and recalculate required area until the required area is achieved.

Configuration for Use in a Treatment Train

- Bioretention areas may be preceeded in a treatment train by HSCs in the drainage area, which would reduce the required design volume of the bioretention cell. For example, bioretention could be used to manage overflow from a cistern.
- Bioretention areas can be used to provide pretreatment for underground infiltration systems.

Additional References for Design Guidance

- CASQA BMP Handbook for New and Redevelopment: http://www.cabmphandbooks.com/Documents/Development/TC-32.pdf
- SMC LID Manual (pp 68): http://www.lowimpactdevelopment.org/guest75/pub/All_Projects/SoCal_LID_Manual/SoCalLID_Manual_FINAL_040910.pdf
- Los Angeles County Stormwater BMP Design and Maintenance Manual, Chapter 5: http://dpw.lacounty.gov/DES/design_manuals/StormwaterBMPDesignandMaintenance.pdf
- San Diego County LID Handbook Appendix 4 (Factsheet 7): http://www.sdcounty.ca.gov/dplu/docs/LID-Appendices.pdf

  Los Angeles Unified School District (LAUSD) Stormwater Technical Manual, Chapter 4: http://www.laschools.org/employee/design/fs-studies-and-reports/download/white_paper_report_material/Storm_Water_Technical_Manual_2009-opt-red.pdf?version_id=76975850
- County of Los Angeles Low Impact Development Standards Manual, Chapter 5: http://dpw.lacounty.gov/wmd/LA_County_LID_Manual.pdf

Appendix D

Base Map of Drainage Facilities in Orange County

Drainage Facilities Basemap Index

SITE

01 02 03 04
05 06 07 08 09 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24 25
26 27 28 29 30 31 32 33 34
35 36 37 38 39 40 41 42 43 44
45 46 47 48 49 50 51 52 53
54 55 56 57 58 59 60 61
62 63 64 65 66 67 68
69 70 71 72 73
74 75 76 77
78 79 80
81

LEGEND

11 Base Map Grid and Number

A01 Drainage Facilities and Facility ID Number

The drainage information has been prepared for information purposes only.

Facility designations included with this information are for convenience and identification purposes only and are not controlling or intended to imply ownership by the County or the Orange County Flood Control District (OCFCD).

The information is being provided as a courtesy and neither the County of Orange nor OCFCD assume any liabilities for inaccuracy of the information.

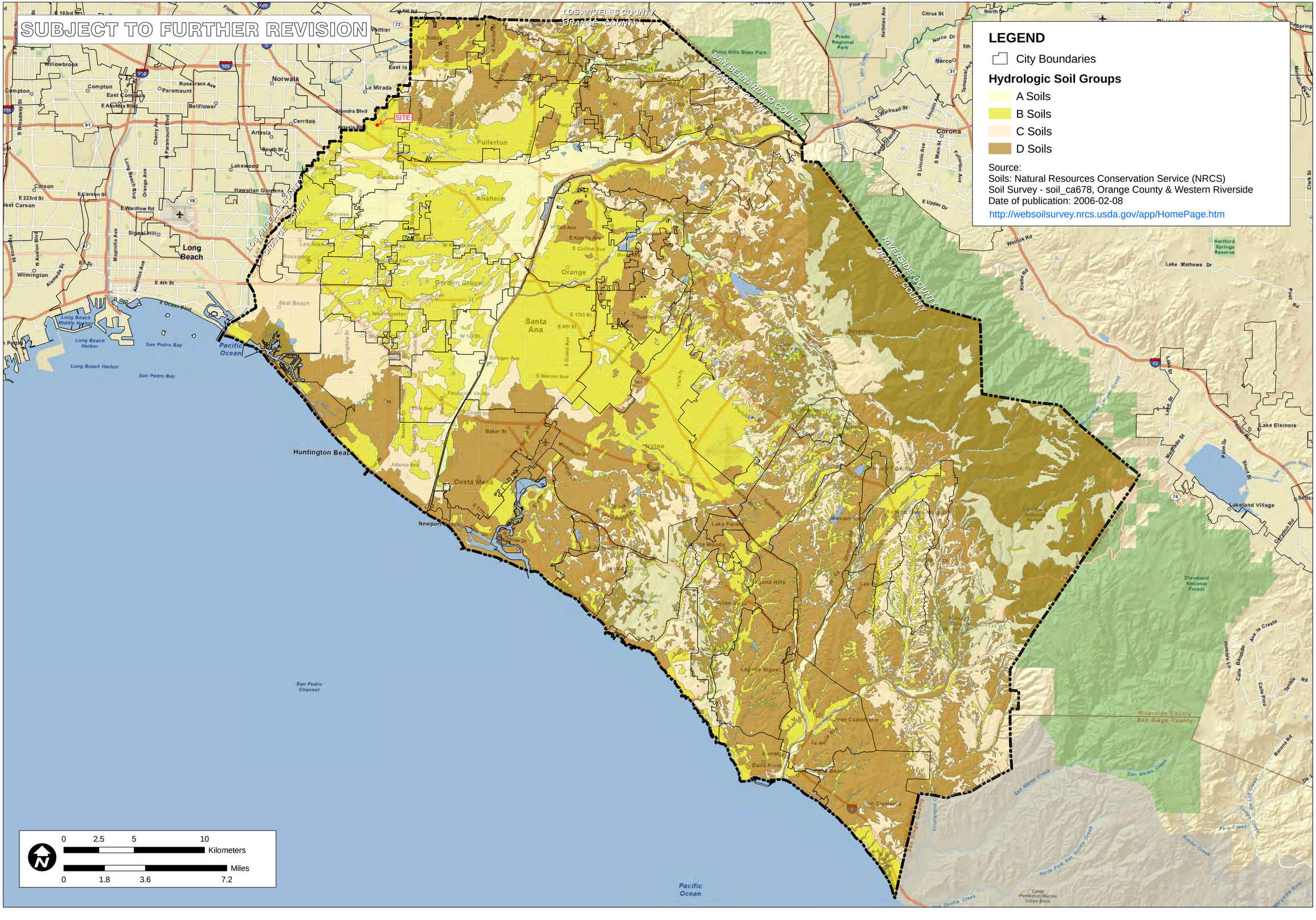
N

OC PUBLIC WORKS
Flood Control Section

0 1 2 3 4 5
Miles

Appendix E
NRCS Hydrologic Soil Group Map

SUBJECT TO FURTHER REVISION



LEGEND

City Boundaries

Hydrologic Soil Groups

- A Soils
- B Soils
- C Soils
- D Soils

Source:
Soils: Natural Resources Conservation Service (NRCS)
Soil Survey - soil_ca678, Orange County & Western Riverside
Date of publication: 2006-02-08
http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

0 2.5 5 10 Kilometers

0 1.8 3.6 7.2 Miles

TITLE

NRCS HYDROLOGIC SOILS GROUPS

JOB

ORANGE COUNTY INFILTRATION STUDY

ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE

XVI-2a

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2a_HydroSoils_20110215.mxd

Appendix F
Rainfall Zone Map

SUBJECT TO FURTHER REVISION

LEGEND

- Orange County Precipitation Stations
- 24 Hour, 85th Percentile Rainfall (Inches)
- 24 Hour, 85th Percentile Rainfall (Inches) - Extrapolated
- City Boundaries

Rainfall Zones

Design Capture Storm Depth (inches)

- 0.65"
- 0.7
- 0.75
- 0.80
- 0.85
- 0.90
- 0.95
- 1.00
- 1.10"

Note: Events defined as 24-hour periods (calendar days) with greater than 0.1 inches of rainfall.
For areas outside of available data coverage, professional judgment shall be applied.

0.65 0.7 0.75 0.8 0.85 0.9 0.95 1 1.05 1.1

SITE

LOS ANGELES COUNTY
ORANGE COUNTY
SAN BERNARDINO COUNTY
RIVERSIDE COUNTY
San Diego County

0 3 6 12 Kilometers
0 1.8 3.6 7.2 Miles

TITLE: RAINFALL ZONES

ORANGE COUNTY
TECHNICAL GUIDANCE
DOCUMENT

JOB: ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-1

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Appendix G
Worksheets for Simple Design Capture VolumeSizing Method and Capture Efficiency Method for Flow-Based BMPs

Worksheet B: Simple Design Capture Volume Sizing Method A1

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.95	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.95	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.034	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.91	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.836	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	98.02	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=	NA	In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=	NA	
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=	NA	In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=	NA	Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=	NA	feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=	NA	sq-ft

Worksheet B: Simple Design Capture Volume Sizing Method A2

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.95	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.95	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.034	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.91	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.836	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	98.02	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=	NA	In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=	NA	
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=	NA	In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=	NA	Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=	NA	feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=	NA	sq-ft

Worksheet B: Simple Design Capture Volume Sizing Method A3

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.95	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.95	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.038	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.92	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.84	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	110.08	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=	NA	In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=	NA	
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=	NA	In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=	NA	Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=	NA	feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=	A	sq-ft

Worksheet B: Simple Design Capture Volume Sizing Method B1

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.95	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.95	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.034	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.93	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.84	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	98.49	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=	NA	In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=	NA	
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=	NA	In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=	NA	Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=	NA	feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=	NA	sq-ft

Worksheet B: Simple Design Capture Volume Sizing Method B2 & B3

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.95	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.95	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.035	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.92	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.84	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	101.39	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=	NA	In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=	NA	
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=	NA	In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=	NA	Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=	NA	feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=	NA	sq-ft

Worksheet B: Simple Design Capture Volume Sizing Method C1

Step 1: Determine the design capture storm depth used for calculating volume				
1	Enter design capture storm depth from Figure III.1, *d* (inches)	d=	0.95	inches
2	Enter the effect of provided HSCs, d_{HSC} (inches) (Worksheet A)	d_{HSC}=	0	inches
3	Calculate the remainder of the design capture storm depth, $d_{remainder}$ (inches) (Line 1 – Line 2)	$d_{remainder}$=	0.95	inches
Step 2: Calculate the DCV				
1	Enter Project area tributary to BMP (s), *A* (acres)	A=	0.419	acres
2	Enter Project Imperviousness, *imp* (unitless)	imp=	0.89	
3	Calculate runoff coefficient, *C= (0.75 x imp) + 0.15*	C=	0.82	
4	Calculate runoff volume, V_{design}= *(C x* $d_{remainder}$ *x A x 43560 x (1/12))*	V_{design}=	1182.45	cu-ft
Step 3: Design BMPs to ensure full retention of the DCV				
Step 3a: Determine design infiltration rate				
1	Enter measured infiltration rate, $K_{measured}$ (in/hr) (Appendix VII)	$K_{measured}$=	NA	In/hr
2	Enter combined safety factor from Worksheet H, S_{final} (unitless)	S_{final}=	NA	
3	Calculate design infiltration rate, $K_{design} = K_{measured} / S_{final}$	K_{design}=	NA	In/hr
Step 3b: Determine minimum BMP footprint				
4	Enter drawdown time, *T* (max 48 hours)	T=	NA	Hours
5	Calculate max retention depth that can be drawn down within the drawdown time (feet), $D_{max} = K_{design} \times T \times (1/12)$	D_{max}=	NA	feet
6	Calculate minimum area required for BMP (sq-ft), $A_{min} = V_{design} / d_{max}$	A_{min}=	NA	sq-ft

Tributary Area A1 = 0.034 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 98.02 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 98.02/(0.25+0.625) = 112.02 sf required. Provided 128 sf of bio-retention with underdrain ok

Tributary Area A2 = 0.034 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 98.02 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 98.02/(0.25+0.625) = 112.02 sf required. Provided 128 sf of bio-retention with underdrain ok

Tributary Area A3 = 0.038 acres as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 110.08 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed

through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 110.08/(0.25+0.625) = 125.8 sf required. Provided 128 sf of bio-retention with underdrain ok

Tributary B1 = 0.034 acres as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 98.49 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed

through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 98.49/(0.33+0.625) = 103.13 sf required. Provided 105 sf of bio-retention with underdrain ok

Tributary Area B2 = 0.035 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 101.39f.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 101.39/(0.25+0.625) = 115.87 sf required. Provided 117 sf of bio-retention with underdrain ok

Tributary Area B3 = 0.035 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 101.39 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 101.39/(0.25+0.625) = 115.87 sf required. Provided 117 sf of bio-retention with underdrain ok

Tributary Area C1 = 0.419 acre as shown on WQMP exhibit.

Step 1: Determine DCV

Total volume required = 1182.45 cf.

Step 2: Determine the drawdown time associated with the selected basin geometry

DD = (dp / KDESIGN) × 12 in/ft

Where:

DD = time to completely drain infiltration basin ponding depth, hours

dP = bioretention ponding depth, ft (should be less than or equal to 1.5 ft)

KDESIGN = design media infiltration rate, in/hr (assume 2.5 inches per hour unless otherwise

proposed)

DD = (1/2.5)x12 = 4.8 hours < 48 hours

The depth of water filtered during the design capture storm can be estimated as the amount routed through the media during the storm, or the ponding depth, whichever is smaller.

dFILTERED = Minimum [((KMEDIA × TROUTING)/12), dP]

Where:

dFILTERED = depth of water that may be considered to be filtered during the design storm event, ft

KMEDIA = media design infiltration rate, in/hr (equivalent to the media hydraulic conductivity with a factor of safety of 2; KMEDIA of 2.5 in/hr should be used unless other information is available) TROUTING = storm duration that may be assumed for routing calculations; this should be assumed to be no greater than 3hours

dFILTERED = Minimum [((2.5 × 3)/12), dP] = 0.625 feet

Step 4: Determine the Facility Surface Area

A = DCV/ (dP + dFILTERED)

Where:

A = required area of bioretention facility, sq-ft DCV = design capture volume, cu-ft

A= 1182.45/(0.25+0.625) = 1,351 sf required. Provided 2,009 sf of bio-retention with underdrain ok

Appendix H
Hydrologic Condition of Concern Study

Not Required

Appendix I
BMP Feasibility Worksheets

Worksheet I: Summary of Groundwater-related Feasibility Criteria
Worksheet J: Summary of Harvested Water Demand and Feasibility

Worksheet I: Summary of Groundwater-related Feasibility Criteria

1	Is project large or small? (as defined by Table VIII.2) circle one	Large	(Small)	
2	What is the tributary area to the BMP?	A	0.69	acres
3	What type of BMP is proposed?	Bio-retention		
4	What is the infiltrating surface area of the proposed BMP?	A_{BMP}	NA	sq-ft
5	What land use activities are present in the tributary area (list all) parking lot, landscape and parsonage building.			
6	What land use-based risk category is applicable?	(L)	M	H
7	If M or H, what pretreatment and source isolation BMPs have been considered and are proposed (describe all):			
8	What minimum separation to mounded seasonally high groundwater applies to the proposed BMP? See Section VIII.2 (circle one)	(5 ft)	10 ft	
9	Provide rationale for selection of applicable minimum separation to seasonally high mounded groundwater: Groundwater seepage was encountered in the boreholes at a depth of approximately fortytwo (42) feet. However, Seismic Hazard Evaluation for the La Habra Quadrangle by the State of California indicates that the highest historic water level in this area was recorded near the ground surface. A copy of Highest Ground Water Levels map is presented on Figure C-3 in Appendix C of the soil report.			
10	What is separation from the infiltrating surface to seasonally high groundwater?	SHGWT	>10	ft
11	What is separation from the infiltrating surface to mounded seasonally high groundwater?	Mounded SHGWT	>10	ft
12	Describe assumptions and methods used for mounding analysis: Groundwater seepage was encountered in the boreholes at a depth of approximately fortytwo (42) feet. However, Seismic Hazard Evaluation for the La Habra Quadrangle by the State of California indicates that the highest historic water level in this area was recorded near the ground surface. A copy of Highest Ground Water Levels map is presented on Figure C-3 in Appendix C of the soil report.			

Worksheet I: Summary of Groundwater-related Feasibility Criteria

13	Is the site within a plume protection boundary (See Figure VIII.2)?	Y N (N/A)
14	Is the site within a selenium source area or other natural plume area (See Figure VIII.2)?	Y N (N/A)
15	Is the site within 250 feet of a contaminated site?	Y N (N/A)
16	If site-specific study has been prepared, provide citation and briefly summarize relevant findings:	
17	Is the site within 100 feet of a water supply well, spring, septic system?	Y N (N/A)
18	Is infiltration feasible on the site relative to groundwater-related criteria?	Y [N]

Provide rationale for feasibility determination:

The site is located in liquefaction area infiltration is not allowed.

This office (SASSAN Geosciences, Inc.) performed CPT soundings at the project site to evaluate the liquefaction potential and seismically induced settlements. Our analyses indicate that the native earth materials, underlying the subject property, at various layers possess factors of safety against liquefaction that are below the minimum Code requirements, and are prone to liquefaction.

Groundwater seepage was encountered in the boreholes at a depth of approximately fortytwo (42) feet. However, Seismic Hazard Evaluation for the La Habra Quadrangle by the

State of California indicates that the highest historic water level in this area was recorded near the ground surface. A copy of Highest Ground Water Levels map is presented on Figure C-3 in Appendix C of this report.

Note: if a single criterion or group of criteria would render infiltration infeasible, it is not necessary to evaluate every question in this worksheet.

Worksheet J: Summary of Harvested Water Demand and Feasibility

1	What demands for harvested water exist in the tributary area (check all that apply):			
2	Toilet and urinal flushing		□	
3	Landscape irrigation		□	
4	Other:_____		□	
5	What is the design capture storm depth? (Figure III.1)	d	0.95	inches
6	What is the project size?	A	0.69	ac
7	What is the acreage of impervious area?	IA	0.57	ac
	For projects with multiple types of demand (toilet flushing, irrigation demand, and/or other demand)			
8	What is the minimum use required for partial capture? (Table X.6)	770x0.57=738.9		gpd
9	What is the project estimated wet season total daily use (Section X.2)?	9.3		gpd
10	Is partial capture potentially feasible? (Line 9 > Line 8?)	NO		
	For projects with only toilet flushing demand			
11	What is the minimum TUTIA for partial capture? (Table X.7)	117		
12	What is the project estimated TUTIA?	48		
13	Is partial capture potentially feasible? (Line 12 > Line 11?)	NO		
	For projects with only irrigation demand			
14	What is the minimum irrigation area required based on conservation landscape design? (Table X.8)	1.07x0.57=0.61		ac
15	What is the proposed project irrigated area? (multiply conservation landscaping by 1; multiply active turf by 2)	0.12		ac
16	Is partial capture potentially feasible? (Line 15 > Line 14?)	NO		

Provide supporting assumptions and citations for controlling demand calculation:

Appendix J
Shallow Groundwater Area Map

SUBJECT TO FURTHER REVISION

LEGEND

City Boundaries

OCWD Groundwater Basin Protection Boundary

Depth To Groundwater

<= 5'

5-10'

Note: Data are not available for South Orange County at this time.

Source:
Sprotte, Fuller and Greenwood, 1980.
California Division of Mines and Geology;
California Geological Survey

LOS ANGELES COUNTY
ORANGE COUNTY

SAN BERNARDINO COUNTY
ORANGE COUNTY

RIVERSIDE COUNTY
ORANGE COUNTY

LOS ANGELES COUNTY
ORANGE COUNTY

SITE

0 2 4 8 Kilometers

0 1.25 2.5 5 Miles

TITLE
NORTH ORANGE COUNTY
MAPPED SHALLOW GROUNDWATER

ORANGE COUNTY
INFILTRATION STUDY

CA

JOB
ORANGE CO.

SCALE	1" = 1.25 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

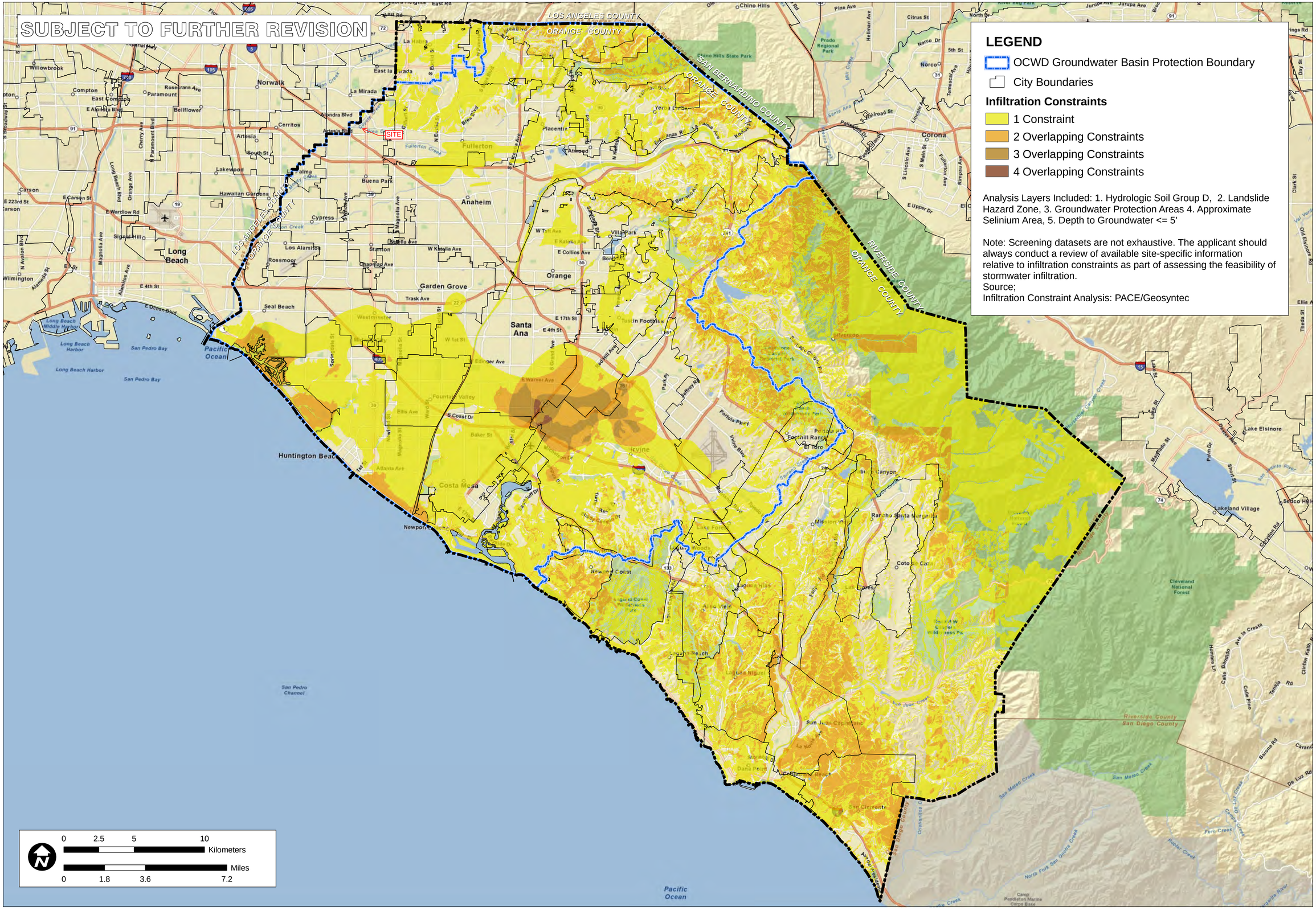
PACE
Advanced Water Engineering

FIGURE
XVI-2e

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2e_DepthToGroundwater15ft_20110215.mxd

Appendix K
Infiltration Analysis Overlapping Constraint Location Map

SUBJECT TO FURTHER REVISION



LEGEND

- OCWD Groundwater Basin Protection Boundary
- City Boundaries

Infiltration Constraints

- 1 Constraint
- 2 Overlapping Constraints
- 3 Overlapping Constraints
- 4 Overlapping Constraints

Analysis Layers Included: 1. Hydrologic Soil Group D, 2. Landslide Hazard Zone, 3. Groundwater Protection Areas 4. Approximate Selinium Area, 5. Depth to Groundwater <= 5'

Note: Screening datasets are not exhaustive. The applicant should always conduct a review of available site-specific information relative to infiltration constraints as part of assessing the feasibility of stormwater infiltration.
Source;
Infiltration Constraint Analysis: PACE/Geosyntec

0 2.5 5 10 Kilometers

0 1.8 3.6 7.2 Miles

P:\95226E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\95226E_FigureXVI-2g_InfiltrationFinal_20110215.mxd

TITLE
INFILTRATION ANALYSIS
OVERLAPPING CONSTRAINT LOCATIONS

JOB
ORANGE COUNTY INFILTRATION STUDY
ORANGE CO. CA

SCALE	1" = 1.8 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	04/22/10
JOB NO.	95226-E

PACE
Advanced Water Engineering

FIGURE
XVI-2g

Appendix L
North Orange County Mapped Depth to 1st Groundwater Map

SUBJECT TO FURTHER REVISION

LEGEND

- Depth To First Groundwater Contours
- City Boundaries
- OCWD Groundwater Basin Protection Boundary

Note: Data are not available for South Orange County at this time.

Source:
Sprotte, Fuller and Greenwood, 1980.
California Division of Mines and Geology;
California Geological Survey

LOS ANGELES COUNTY
ORANGE COUNTY

SAN BERNARDINO COUNTY
ORANGE COUNTY

RIVERSIDE COUNTY
ORANGE COUNTY

SITE

0 2 4 8 Kilometers
0 1.25 2.5 5 Miles

P:\9526E\6-GIS\Mxds\Reports\InfiltrationFeasability_20110215\9526E_FigureXVI-2d_DepthToGroundwaterOverview_20110215.mxd

TITLE
NORTH ORANGE COUNTY
MAPPED DEPTH TO FIRST
GROUNDWATER

JOB
ORANGE COUNTY
INFILTRATION STUDY
ORANGE CO. CA

SCALE	1" = 1.25 miles
DESIGNED	TH
DRAWING	TH
CHECKED	BMP
DATE	02/09/11
JOB NO.	9526-E

PACE
Advanced Water Engineering

FIGURE
XVI-2d

Appendix M

Preliminary Geotechnical Investigation Report

MR. SEAN MO, PRINCIPAL
ANDMORE PARTNERS, INC.
3530 WILSHIRE BOULEVARD, SUITE NO. 1830
LOS ANGELES, CALIFORNIA 90010

PRELIMINARY
GEOTECHNICAL ENGINEERING INVESTIGATION
AND
LIQUEFACTION STUDY

FOR

7682-7712 CRAIG AVENUE
BUENA PARK

Prepared By

SASSAN Geosciences, Inc.
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869

September 19, 2019

SAS SASSAN Geosciences, Inc.

September 19, 2019

Mr. Sean Mo, Principal
Andmore Partners, Inc.
3530 Wilshire Boulevard, Suite No. 1830
Los Angeles, CA 90010

Subject: Preliminary Geotechnical Engineering Investigation
and Liquefaction Study
7682 -7712 Craig Avenue, Buena Park
SAS File Number: 9SMO183

Dear Mr. Mo:

SASSAN Geosciences, Inc. (SAS) has completed a preliminary geotechnical engineering investigation and liquefaction study for the subject property. Our investigation was performed to determine the nature of surface and subsurface soils and to evaluate their physical and engineering properties. The results were then analyzed, and recommendations for foundation design and related parameters were prepared. This report presents our findings and recommendations.

LOCATION AND SITE DESCRIPTION

The subject property is located on the south side of Craig Avenue in the City of Buena Park, California. A vicinity map is presented on Figure A-1 in Appendix A of this report.

The property is located in a relatively level area, and is comprised of four adjoining, vacant lots. The property borders Craig Avenue on the north, parking lots of neighboring office buildings on the south and east, the Brea Creek (channel) on the south-west, and a one-story single-family residence on the west. A plot plan indicating the locations of the existing and proposed improvements is presented on Figure A-2 in Appendix A of this report.

At the time of our field investigation, the eastern portion of the property was covered by dense, tall annual grasses, and the western portion of the property was used as a storage area for various equipment and materials, which restricted the access to some parts of the property.

OBJECTIVE

The owners wish to assess the geotechnical characteristics of the underlying ground in order to construct a four-story senior living structure over one level subterranean parking structure at the subject property. A plot plan indicating the locations of the existing and proposed improvements is presented on Figure A-2 in Appendix A of this report.

FIELD INVESTIGATION

Subsurface exploration was performed on July 22, 2019 and involved drilling two (2) boreholes to a maximum depth of approximately fifty (50) feet. The drilling operation was performed utilizing an eight-inch diameter hollow stem auger, mounted on a drilling rig. Two and one-half-inch (2.5) diameter split spoon ring samples and standard penetration test (SPT) samples were obtained from the boreholes with a thirty (30) inch drop of a one-hundred-forty (140) pound hammer. Earth materials encountered were

classified in accordance with the visual-manual procedures of the Unified Soil Classification System.

In addition, on July 22, 2019 this office (SASSAN Geosciences, Inc.) has performed CPT soundings at the project site to evaluate the liquefaction potential and seismically induced settlements. A total of ten (10) CPT soundings have been performed at the subject property. A plot plan indicating the approximate locations of the bore holes and CPT tests is presented on Figure A-2 in Appendix A of this report.

EARTH MATERIALS

The earth materials encountered in the boreholes and test pits consist of up to approximately two (2) feet of fill underlain by younger alluvial deposits, which extend to the depths explored. Detailed logs of the boreholes are presented on Figures B-1 and B-2 in Appendix B of this report.

The density of alluvium increases by depth, however, the conventional earth moving machinery should be able to handle the grading operation. We do not anticipate that ripability becomes an issue during the grading at the subject site.

A copy of a regional geologic map (Dibblee) is presented on Figure D-1 in Appendix D of this report.

GROUNDWATER

Groundwater seepage was encountered in the boreholes at a depth of approximately forty-two (42) feet. However, Seismic Hazard Evaluation for the La Habra Quadrangle by the State of California indicates that the highest historic water level in this area was recorded near the ground surface. A copy of Highest Ground Water Levels map is presented on Figure C-3 in Appendix C of this report.

LABORATORY TESTING

Moisture content (ASTM D 2216), shear strength (ASTM D 3080) and consolidation (ASTM D 2435) tests were performed for selected samples of soil considered to be representative of those encountered. The results of direct shear tests are presented on Figure B-3, and the results of consolidation tests are presented on Figures B-4 and B-5 in Appendix B of this report. Evaluation of the test data is reflected throughout this report.

SEISMIC HAZARDS

Seismically Induced Landslide: The subject property is located in a relatively level area. seismically induced landslides are not of concern for this property. In addition, on the "State of California Seismic Hazard Zones" map the site is located outside of the seismically induced landslide hazard zones. A copy of the Seismic Hazard Zones Map is presented on Figure C-1 in Appendix C of this report.

Liquefaction: The subject property is shown on the "State of California Seismic Hazard Zones" map, presented on Figure C-1 in Appendix C of this report. The site is located within a potential liquefaction hazard zone. Detailed information regarding the liquefaction analyses, performed for this property, is provided in the following section of this report.

Fault and Ground Rupture: The subject property is located at a significant distance from the nearest active fault. No ground rupture has been observed at the site and same is not anticipated or expected. A copy of the Earthquake Fault Zones Map is presented on Figure C-2 in Appendix C of this report.

Seismically Induced Settlement: Based on our analyses, the maximum total seismically induced settlements are expected to be less than 2.1 inches.

Tsunami: The property is situated at a significant distance from the ocean. As such, tsunami is not a concern for this property.

Seiche: The subject property is situated on a significant distance from the nearest enclosed body of water. As such, seiche is not of a concern for this property.

Expansive Soils: The recommendations provided for the design of the foundations and slabs-on-grade consider highly expansive earth materials.

CAUSES OF SOIL LIQUEFACTION

The basic cause of liquefaction of sands has been understood, in a qualitative way, for many years. If a saturated sand is subjected to ground vibrations, it tends to compact and decrease in volume; if drainage is unable to occur, the tendency to decrease in volume results in an increase in pore water pressure, and if the pore water pressure builds up to the point at which it is equal to the overburden pressure, the effective stress becomes zero, the sand loses its strength completely, and it develops a liquefied state.

In more quantitative terms, it is now generally believed that the basic cause of liquefaction in saturated cohesionless soils during earthquakes is the buildup of excess hydrostatic pressure due to the application of cyclic shear stresses induced by the ground motions. These stresses are generally considered to be due primarily to upward propagation of shear waves in a soil deposit, although other forms of wave motions are also expected to occur. Thus, soil elements can be considered to undergo a series of cyclic stress conditions. The stress series being somewhat random in pattern but nevertheless cyclic in nature.

As a consequence of the applied cyclic stresses, the structure of the cohesionless soil tends to become more compact with a resulting transfer of stress to the pore water and a reduction in stress on the soil grains. As a result, the soil grain structure rebounds to the extent required to keep the volume constant, and this interplay of volume reduction and soil structure rebound determines the magnitude of the increase in pore water pressure in the soil (Martin et al, 1975). The mechanism can be quantified so that the pore pressure increases due to any given sequence of stress applications can be computed from a knowledge of the stress-strain characteristics, the volume change characteristics of the sand under cyclic strain conditions, and the rebound characteristics of the sand due to stress reduction.

As the pore water pressure approaches a value equal to the applied confining pressure, the sand begins to undergo deformations. If the sand is loose, the pore pressure will increase suddenly to a value equal to the applied confining pressure, and the sand will rapidly begin to undergo large deformations with shear strains that may exceed ~20 percent or more. If the sand will undergo virtually unlimited deformations without mobilizing significant resistance to deformation, it can be said to be liquefied. If, on the other hand, the sand is dense, it may develop a residual pore water pressure, on completion of a full stress cycle, which is equal to the confining pressure (a peak cyclic pore pressure ratio of 100%), but when the cyclic stress is reapplied on the next stress cycle, or if the sand is subjected to monotonic loading, the soil will tend to dilate, the pore pressure will drop if the sand is undrained, and the soil will ultimately develop enough resistance to withstand the applied stress. However, it will have to undergo some degree of deformation to develop the resistance, and as the cyclic loading continues, the amount of deformation required to produce a stable condition may increase. Ultimately, however, for any cyclic loading condition, there appears to be a cyclic strain level at which the soil will be able to withstand any number of cycles of a given stress without further increase in maximum deformation (De Alba et al, 1976). This type of behavior is termed “cyclic mobility” and it is considerably less serious than liquefaction, its significance depending on the magnitude of the limiting strain. It should be noted, however, that once the cyclic stress applications stop, if they return to a zero stress condition, there will be a residual pore water pressure in the soil equal to the overburden pressure, and this will inevitably lead to an upward flow of water in the soil which could have deleterious consequences for overlying layers.

Liquefaction of a sand in this way may develop in any zone of a deposit where the necessary combination of in-situ conditions and vibratory deformations may occur. Such a zone may be at the surface or at some depth below the ground surface, depending only on the state of the sand and the induced motions.

However, liquefaction of the upper layers of a deposit may also occur, not as a direct result of the ground motions to which they are subjected, but because of the development of liquefaction in an underlying zone of the deposit. Once liquefaction develops at a some depth in a mass of sand, the excess hydrostatic pressures in the liquefied zone will dissipate by flow of water in an upward direction. If the hydraulic gradient becomes sufficiently large, the upward flow of water will induce a "quick" or liquefied condition in the surface layers of the deposit. Liquefaction of this type will depend on the extent to which the necessary hydraulic gradient can be developed and maintained; this, in turn, will be determined by the compaction characteristics of the sand, the nature of ground deformations, the permeability of the sand, the boundary drainage conditions, the geometry of the particular situation, and the duration of the induced vibrations.

It is now possible to analyze the generation and dissipation of pore water pressures in soil deposits during and following earthquakes (Finn et al, 1977; Liou et al, 1977; Martin and Seed, 1979; Seed et al, 1976), and the results of such studies can provide valuable insights into possible site behavior in some cases. However, the level of analytical capability used in these studies has probably outstretched our engineering ability to provide details of soil profile stratification and soil property determinations with sufficient accuracy to make the analytical results reliable. Furthermore, in dealing with sands, silty sands and silts, for which most liquefaction problems occur, dissipation effects during an earthquake are not significant. Accordingly it is customary to base evaluations of soil liquefaction or cyclic mobility potential on the assumption that all sand layers are undrained during the period of earthquake shaking. If under undrained conditions, it can be shown that every layer in a soil profile has an adequate margin of safety against the development of liquefaction or cyclic mobility, then no significant pore pressures will be generated and consideration of pore pressure dissipation is unnecessary. This approach is followed in the procedures outlined in the following pages for evaluating the liquefaction potential of soil deposits.

General Method Of Evaluating Liquefaction Potential

The liquefaction potential of any given soil deposit is determined by a combination of the soil properties, environmental factors and characteristics of the earthquake to which it may be subjected. Specific factors which any liquefaction evaluation should desirably take into account include the following:

Soil Properties:

- Dynamic shear modulus
- Damping characteristics
- Unit weight
- Grain characteristics
- Relative density
- Soil structure

Environmental Factors:

- Method of soil formation
- Seismic history
- Geologic history (aging, cementation)
- Lateral earth pressure coefficient
- Depth of water table
- Effective confining pressure

Earthquake Characteristics:

Intensity of ground shaking
Duration of ground shaking

Liquefaction Analyses Utilizing SPT Data

The analyses were performed to evaluate the potential hazards of soil liquefaction at the subject property due to earthshaking during a major earthquake. The analyses were performed for all the soil layers encountered in the boreholes utilizing the data obtained during the field exploration (depths of soil layers SPT tests; field blow count values from Standard Penetration Tests) and from the laboratory test results (unit weight of soil; percentage of the fine materials passing through #200 sieve).

Our analyses indicate that the native earth materials, underlying the subject property, at various layers possess factors of safety against liquefaction that are below the minimum Code requirements, and are prone to liquefaction. Copies of the liquefaction analyses based on SPT data are presented in Appendix E of this report.

Based on our analyses, utilizing SPT data, the maximum total seismically induced settlements are expected to be less than 2.1 inches. Copies of the seismically induced settlement analyses based on SPT data are presented in Appendix F of this report.

Liquefaction Analyses Utilizing CPT Data

This office (SASSAN Geosciences, Inc.) performed CPT soundings at the project site to evaluate the liquefaction potential and seismically induced settlements. Our analyses indicate that the native earth materials, underlying the subject property, at various layers possess factors of safety against liquefaction that are below the minimum Code requirements, and are prone to liquefaction. The results of the liquefaction analyses based on CPT data are presented in Appendix G, and a complete copy of the liquefaction analysis based on CPT data is presented in the Enclosures.

Based on our analyses, utilizing CPT data, the maximum total seismically induced settlements are expected to be less than 1.5 inches. Copies of the seismically induced settlement analyses based on CPT data are presented in Appendix H of this report.

CONCLUSIONS AND RECOMMENDATIONS

General

The referenced property is considered to be suitable for the proposed construction from a geotechnical engineering standpoint, provided that our recommendations are incorporated into the approved construction plans.

The conclusions and recommendations presented here are based on our observations at the site during our investigation, engineering judgment, CPT soundings and analysis of the soil samples obtained from the boreholes. Minor variations of subsurface conditions are common, and major variations are possible.

General Grading

Grading areas must be stripped of all vegetation, debris, and other deleterious material. All loose soil disturbed by the removal of trees and/or structures (if applicable) must be removed and recompacted.

The existing fill is up to approximately two (2) feet thick and is not suitable for foundation support. At locations where new fill is proposed, the existing fill must be entirely removed and replaced with a certified engineered fill. The proposed new fill must be placed in horizontal layers, and must be benched into undisturbed competent younger alluvial deposits.

Temporary Excavations

The review of the architectural plans indicates that excavations up to approximately twelve (12) feet in depth will be required during construction of the proposed subterranean parking structure. The temporary excavations will be performed at a distance from the property lines that is less than the depth of the excavations. Therefore, shoring must be designed for the temporary excavations of the proposed subterranean parking structure. The recommendations for design and installation of shoring are provided in the following sections of this report.

Based on the integrity of the site earth materials, it is our opinion that other unsurcharged temporary excavations may be performed continuously in accordance with the following table:

Maximum Depth of Cut (ft)	*Maximum Slope Ratio (H:V)*
0-5	Vertical
>5	1:1

The contractor may perform the excavation under continuous monitoring of a grading inspector who would ensure the quality of grading and presence of competent earth materials. The excavations may be left open for a temporary period of four (4) weeks. A grading inspector must be present when laborers are working within five (5) feet of the temporary cut area.

Shoring Installation

The review of the architectural plans indicates that excavations up to approximately twelve (12) feet in depth will be required during construction of the proposed subterranean parking. Shoring must be designed for the temporary excavations. The temporary excavations may commence only after installation of the soldier piles of the shoring system. The shoring may consist of wide flange I-beams imbedded in concrete soldier piles and wooden lagging that spans between the I-beams. The final design of the shoring must be performed by the consulting civil engineer. The recommendations for the design of the shoring elements are provided in the following section of this report. The installation of the shoring must be performed in the following order:

1. The soldier piles must be drilled from the existing surface down to the required depth (to be determined by the consulting civil engineer).

2. Steel I-beams for shoring must be installed in soldier pile shafts.

3. The soldier piles must be filled with concrete up to the bottom of the proposed mat foundation.

4. The rest of the soldier piles must be filled with one-sack-slurry up to the existing surface.

5. The initial excavation for installation of the wood lagging may be performed up to five feet below the existing grade.

6. The wood lagging must be installed between the I-beams up to the bottom of the excavation.

7. The lagging must be backfilled with incompressible material such as one-sack-slurry or similar.

8. The excavation may be performed up to the design depth (bottom of the proposed mat foundation) in five-foot vertical intervals repeating the steps 5 through 7.

9. The wood lagging must be installed up to the level of top of the proposed mat foundation.

10. Subdrain system must be installed per recommendations provided in "Subdrain System" section of this report.

11. A soils inspector approved by and responsible to this office will be required to provide continuous inspection during the drilling of the proposed soldier piles and installation of shoring.

Shoring Design Recommendations

The temporary shoring may consist of wide flange I-beams imbedded in concrete soldier piles and wooden lagging that spans between the I-beams. The pressure distribution diagrams for the design of the shoring elements are presented in Appendix K of this report. The final design of the shoring must be performed by the consulting civil engineer. The following minimums apply to the design of the shoring elements:

1. Soldier piles of the shoring system must be founded at a minimum depth of eight (8) feet into undisturbed younger alluvium. The actual depth of soldier piles, however, must be determined by the structural engineer in conjunction with this office.

2. Soldier piles must have a minimum diameter of twenty-four (24) inches.

3. The maximum allowable horizontal spacing of the shoring piles must be eight (8) feet center-to-center. The results of the analysis for stability of the temporary excavations after installation of the shoring piles are presented in Appendix J of this report.

4. The pile excavations must be covered, if left overnight.

5. A side friction value of 500 psf in compression and 250 psf in tension may be utilized for the portion of the shoring piles that are penetrated into undisturbed younger alluvium.

6. Active earth pressure increasing at a minimum rate of 33 psf per foot of depth must be used in the design of cantilevered shoring elements. The results of the active pressure analyses for shoring are presented in Appendix K of this report.

7. Active earth pressure increasing at a minimum rate of 30 psf per foot of depth up to the maximum of 400 psf must be used in the design of wooden lagging that spans between the I-beams.

8. Passive earth pressure increasing at a maximum rate of 250 psf per foot of depth, to a maximum of 2,500 psf, must be applied to portions of the soldier piles that are embedded a minimum two (2) feet into undisturbed younger alluvium.

9. The suggested passive pressure may be doubled for an isolated pile condition (d>2.5D).

10. Maximum allowable horizontal deflection of the shoring piles is one-half (½) inch to protect the neighboring properties.

Survey Before and During Construction (Blemish Survey)

Prior to groundbreaking, the owner (the contractor) needs to perform a comprehensive survey of the neighboring properties, which shall include the services of a licensed surveyor and the observation of the existing buildings and other structures, records of all observed existing signs of lateral movement and settlement, supplemented with pictures and other documents. After completion of the installation, the shoring must be periodically monitored by a licensed surveyor for a lateral deflection of the vertical elements. The monitoring of the shoring must be performed not less than once every week. The first reading must be taken immediately after the completion of installation of the shoring, and consecutive readings must be taken on a weekly basis. The maximum lateral deflection of the shoring system must be limited to one-half (½) of an inch. In the event that lateral movements of the shoring in excess of one-half (½) of an inch are encountered, the consulting geotechnical-engineer-of-record and structural-engineer-of-record must be notified immediately.

Foundations

The proposed structure must be supported by a mat foundation. The proposed mat foundation must be founded into undisturbed, native, natural younger alluvium. In addition, the bottom of the proposed mat foundation must be below a plane with a slope of one horizontal to one vertical (1:1) projected upward from the bottom edge of adjacent existing footings (if applicable).

An allowable bearing capacity of up to the maximum value of 2,000 psf must be used for soils beneath the proposed mat foundation, founded a minimum of twenty-four (24) inches into undisturbed, native, natural younger alluvium. The maximum loading for the mat foundation in localized areas should not exceed 3,000 psf, and the maximum extent of the area allowed with the maximum localized loading should not exceed 20 feet by 20 feet. Copies of the bearing capacity analyses are presented in Appendix L of this report.

The allowable bearing value is for dead-plus-live loads and may be increased by thirty (30) percent for momentary wind and seismic loads. The following minimums apply to all footings:

1. The proposed mat foundation must be founded a minimum of twenty-four (24) inches into undisturbed, native, natural younger alluvium.

2. The final design of the proposed mat foundation must be provided by a structural engineer in conjunction with this office.

3. Active earth pressure increasing at a minimum rate of 68 psf per foot of depth must be used in the design of cantilevered retaining walls, and at-rest earth pressure increasing at a minimum rate of 99 psf per foot of depth must be used in the design of retaining walls that are braced at the top and the bottom. This value includes additional hydrostatic pressure, in the event the groundwater table rises to its highest historic level. Our analyses indicate, that the values of static and combined static and seismic earth pressures are below above recommended values, therefore additional earth pressure due to seismic forces does not need to be applied to the proposed retaining

walls. The results of the earth pressure analyses are presented in Appendix M of this report.

4. Due to historic groundwater levels, recorded in the area, the concrete floor slab and the retaining walls of the proposed subterranean parking, located below the existing ground level, must be designed for additional hydrostatic pressure, in the event the groundwater table rises to its highest historic level.

5. In addition, the proposed basement slab and retaining walls must be designed to compensate for potential uplift forces and to prevent flotation of the structure, in the event the ground water rises to its highest historic level.

6. The retaining walls must be design for a maximum allowable horizontal deflection of one-half (½) inch.

7. A coefficient of friction of 0.25 must be utilized for resisting lateral loads at the contact surface of concrete and foundation soils.

8. Passive earth pressure increasing at the maximum rate of 250 psf per foot of depth, to a maximum of 2,500 psf, may be used in calculations.

9. The design modulus of subgrade reaction (k_s) for the subject property is 150 kcf.

10. Frictional and passive resistance of the proposed mat foundation may be combined, provided the passive bearing resistance does not exceed two-thirds of the allowable passive bearing.

11. All concrete elements of the substructure, which are in contact with the soil, must be constructed from concrete based on Cement Type V for highly corrosive soils.

Subdrain System

The proposed retaining walls must be provided with perforated pipe and gravel sub-drain to prevent entrapment of water in the backfill. The perforated pipe must consist of four-inch (4") minimum diameter PVC Schedule 40, or ABS SDR-35, with a minimum of sixteen (16) perforations per foot on the bottom one-third of the pipe. Every foot of the pipe should be embedded in three (3) cubic feet of three-quarter-inch (3/4") gravel wrapped in filter fabric (Mirafi 140N or equal).

The subdrain system behind the retaining walls of the subterranean parking structure will be located below the street level and will not drain via gravity. The subdrain water must be collected in a concrete catch basin and pumped to the street via sump-pumps. It is our recommendation to construct the proposed sump-pump pit outside of the building perimeter.

The records of historic ground water levels indicate that the water table has reached nearly levels the existing grade. As such, in addition to subdrain system, the basement retaining walls and slabs-on-grade must be provided with an extensive waterproofing. The waterproofing must be designed by a waterproofing specialist.

Seismic Design Parameters

The seismic parameters for the design of the proposed structure based on the 2016 California Building Code are as follows:

Latitude	33° 52’ 42” N
Longitude	117° 59’ 58” W
Site Classification	D
Site Coefficient, F_a	1.0
Site Coefficient, F_v	1.5
Site Spectral Response Acceleration Parameters (g):	
Mapped Acceleration, S_S (0.2 sec.)	1.771
Mapped Acceleration, S_1 (1 sec.)	0.637
Adjusted Maximum Acceleration, S_{MS} (0.2 sec.)	1.771
Adjusted Maximum Acceleration, S_{M1} (1 sec.)	0.956
Design Acceleration, S_{DS} (0.2 sec.)	1.181
Design Acceleration, S_{D1} (1 sec.)	0.637

Conformance with the above listed criteria for seismic design does not constitute any kind of warranty, guarantee, or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and limb, and to prevent catastrophic failures, and not to avoid all damage, since such design may be economically prohibitive.

Settlements

Maximum total and differential settlements are expected to be less than four (4) and two (2) inches, respectively, provided that our recommendations are followed. Copies of the static settlements analyses are presented in Appendix I of this report. Copies of the seismically induced settlement analyses based on SPT data are presented in Appendix F of this report. Copies of the seismically induced settlement analyses based on CPT data are presented in Appendix H of this report.

Engineered Fill

All fill earth materials must consist of clean soil that is free of vegetation and other debris. The fill must be placed in six- (6-) to eight- (8-) inch thick lifts at near optimum moisture content and compacted. Particles larger than three (3) inches in diameter must not be allowed in the backfill material. Earth materials must not be imported to the site without prior approval by the soil engineer. All engineered fill must be compacted to a minimum of ninety (90) percent of its maximum dry density (ASTM D 1557). Where cohesionless soil having less than fifteen (15) percent finer than 0.005 millimeter is used for fill, it must be compacted to a minimum of ninety-five (95) percent of its maximum dry density. Neither jetting nor water tamping are permitted.

Heavy construction equipment must be maintained at a minimum distance of three (3) feet from the existing structures. Hand-operated compaction equipment must be used to compact the backfill soils within this 3-foot-wide zone.

Driveway

The subgrade for the proposed driveway must consist of a minimum two (2) foot thick layer of certified compacted fill. The competent subgrade must be covered with four (4) inches of crushed miscellaneous aggregate (CMA) and compacted to ninety-five percent (95%) of its maximum dry density (ASTM D1557). The CMA must be covered by asphalt concrete, concrete slab, stone pavers or equal.

Pipe Bedding and Trench Backfill

The pipe bedding must consist of sand or similar granular material having a minimum sand equivalent value of thirty (30). The sand must be placed in a zone that extends a minimum of six (6) inches below and twelve (12) inches above the pipe for the full trench width. The bedding material must be compacted. The trench backfill above the pipe bedding may consist of approved, on-site or imported soils, and it must be compacted. Where utility trenches are parallel to the footings, the bottom of the trench must be located above a plane with a slope of 1:1, projected downward from the adjacent bottom edge of the footing.

Site Drainage

Drainage devices such as sloping sidewalks and area drains must be provided around the building to collect and direct all water away from the structure. Neither rain nor excess irrigation water should be allowed to collect or pond against foundations. The collected water must be directed to the proper drainage system via non-erosive devices. The actual site drainage, however, must be designed by the consulting civil engineer-of-record.

DESIGN REVIEW

We suggest that the geotechnical aspects of the project be reviewed by this firm during the design process. The scope of our services may include assistance to the design team by providing specific recommendations for special cases, reviewing the foundation design, reviewing the geotechnical portions of the project for possible cost savings through alternative approaches, and evaluating the overall applicability of our recommendations. Additional site-specific explorations may also be considered if significant foundation modifications are required using the above recommendations.

The owner should anticipate that both the consulting soils engineer must review and approve the detailed plans prior to issuance of any permits. This approval shall be by signature on the plans which clearly indicates that the soils engineer has reviewed the plans prepared by the design engineer and that the plans include the recommendations contained in their reports.

INSPECTIONS

All excavations must be inspected and approved. All fill placed for engineering purposes must be tested for compaction and moisture content and certified. The subdrain system must be observed and approved. Inspection of excavations and subdrain system may also be required by the appropriate reviewing governmental agencies.

It is recommended that SAS be retained to verify compliance with the recommendations made in this report, to ensure compliance with the design concepts, specifications, and recommendations, and to allow design changes in the event that exposed subsurface conditions differ from those anticipated herein.

A joint meeting among the parties involved in this project is recommended prior to the start of groundbreaking to discuss specific procedures and scheduling.

Inspections performed by SAS are for verification purposes only and shall under no circumstance relieve other parties involved in the design and construction from their obligation to perform work in accordance with the approved plans.

In the event that the recommendations contained herein are interpreted by others, SAS will not accept responsibility for such interpretations.

INVESTIGATION LIMITATIONS

The conclusions and recommendations presented in this report are based on the findings and observations in the field and the results of laboratory tests performed on representative samples. The soils encountered in the boreholes are believed to be representative of the total area; however, soil characteristics can vary throughout the site. SAS should be notified if subsurface conditions are encountered which differ from those described in this report.

This report has not been prepared for use by parties or projects other than those named and described above. It may not contain sufficient information for other parties or other purposes. The conclusions and recommendations presented in this report are professional opinions. These opinions have been derived in accordance with current standards of geotechnical engineering practice, field observations and laboratory test results. No other warranty is expressed or implied.

Samples secured for this investigation will be retained in our laboratory for a period of thirty (30) days from the date of this report and will be disposed after this period unless other arrangements are made.

This report should be reviewed and updated after a period of one year or if the project concept changes from that described herein.

We appreciate the opportunity to be of service to you. If you have any questions, please call our office.

Sincerely,

SASSAN GEOSCIENCES, INC.



Sassan A. Salehipour, G.E.
President

SAS:ak/9smo183a2.doc
Appendices

REFERENCES:

1. California Division of Mines and Geology, 1997, Seismic Hazard Zone Report for the La Habra 7.5 Minute Quadrangle, Los Angeles and Orange Counties, California; SHZR 01

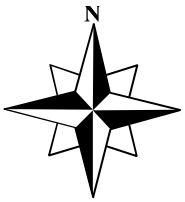
2. California Division of Mines and Geology, 1998, Seismic Hazard Zones Map for the La Habra Quadrangle, Los Angeles County, California; Scale 1:24,000

3. California Division of Mines and Geology, 1991, Official Map of Earthquake Fault Zones, La Habra Quadrangle; Scale 1:24,000

4. Dibblee, T.W., 2001, Geologic Map of the Whittier and La Habra Quadrangles, Los Angeles and Orange Counties, California. Dibblee Geological Foundation, Santa Barbara, California; Map DF-74; Scale 1:24,000

APPENDIX A





SAS	VICINITY MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE A-1

CRAIG AVENUE

P/L

NO ACCESS

NO ACCESS

NO ACCESS

NO ACCESS

NO ACCESS

P/L

P/L

P/L

P/L

CPT-1

CPT-6

CPT-7

CPT-5

CPT-10

B-1

B-2

CPT-9

CPT-8

CPT-4

CPT-3

CPT-2

PROPOSED 4-STORY BUILDING
WITH BASEMENT

EXISTING PARKING

EXISTING 2-STORY
BUILDING

N

SCALE: 1" = 30'

EXPLANATION

CPT-10 — CPT NUMBER AND LOCATION

B-2 — BOREHOLE NUMBER AND LOCATION

FIGURE
A-2

PLOT PLAN
7682, 7692, 7712, 7722 CRAIG AVE, BUENA PARK

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9MOI183

APPENDIX B

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					0	**Fill:** Dark brown, damp to moist, silty clay with trace to some sand, few gravel pieces, many roots
SPT-1			16			**Alluvium:** Gray, moist, firm, silty clay with trace sand
					5	
R-1	102	13				
SPT-2			17			
					10	
R-2	101	20				Dark gray, moist, stiff, silty clay
SPT-3			14			
					15	
R-3	103	14				Gray, wet, medium dense, fine silty sand
SPT-4			21			
					20	
R-4	105	17				Gray, wet, stiff, fine sandy silt and silty sand
SPT-5			23			Gray, wet, stiff, fine sandy silt and silty sand
					25	
SPT-6			27			Gray, wet, stiff, fine sandy silt
					30	
SPT-7			33			Light gray, moist, dense, silty fine sand
					35	
SPT-8			21			Gray, wet, stiff, fine sandy silt
					40	

R = Ring Sample; SPT = SPT Sample

Continue

SAS	LOG OF BORE HOLE NUMBER ONE (B-1) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-1a

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					40	Gray, wet, stiff, fine sandy silt
						Water Seepage
SPT-9			77			Gray, wet, very dense, fine to medium sandy silt
					45	
SPT-10			47			Gray, wet, very dense, fine to medium sandy silt
					50	Gray, wet, very dense, silty fine to medium sand
SPT-11			51			
					55	
					60	
					65	
					70	
					75	
					80	

Excavation Terminated at Depth of 12 Feet
Water Seepage Encountered at Depth of 12 Feet

SPT = SPT Sample

SAS	LOG OF BORE HOLE NUMBER ONE (B-1) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-1b

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					0	**Fill:** Dark brown, damp to moist, silty clay with sand, many roots
SPT-1			15			**Alluvium:** Dark gray, moist, firm, silty clay with caliche
					5	
R-1	105	13				
SPT-2			18			
					10	
R-2	94	16				Dark gray, moist, stiff, silty clay
SPT-3			20			
					15	
R-3	100	18				Dark gray, moist, stiff, silty clay
SPT-4			19			Light gray, moist, dense, silty fine sand
					20	
R-4	102	7				Light gray, moist, dense, silty fine sand
SPT-5			31			Light gray, moist, dense, silty fine sand
					25	
SPT-6			37			Light gray, moist, dense, silty fine sand
					30	
SPT-7			28			Gray, wet, stiff, fine sandy silt
					35	
SPT-8			27			Gray, wet, very dense, silty fine to medium sand
					40	

R = Ring Sample; SPT = SPT Sample

Continue

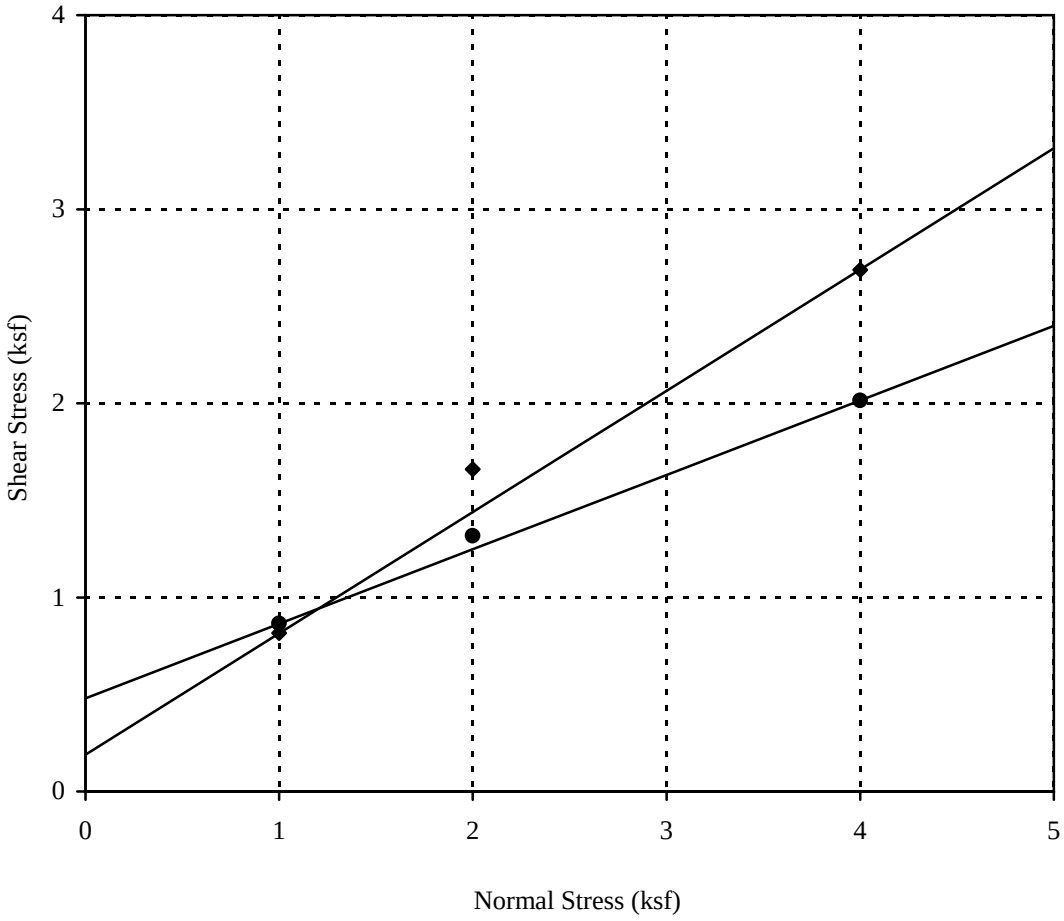
SAS	LOG OF BORE HOLE NUMBER TWO (B-2) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-2a

Sample Number	γ_d (pcf)	Moisture (%)	N	USCS	Depth (ft)	Description
					40	Gray, wet, very dense, silty fine to medium sand
						Water Seepage
SPT-9			15			
					45	
						Gray, wet, stiff, fine sandy silt
SPT-10			29			
					50	Gray, wet, very dense, silty fine to medium sand
SPT-11			39			
					55	
					60	
					65	
					70	
					75	
					80	

Excavation Terminated at Depth of 12 Feet
Water Seepage Encountered at Depth of 12 Feet

SPT = SPT Sample

SAS	LOG OF BORE HOLE NUMBER TWO (B-2) 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-2b



Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Cohesion (psf)	Friction Angle (deg)	Remarks
u	B-1	R-3	15	SM	190	32	1
●	B-2	R-2	10	CL	480	21	2

Remarks:

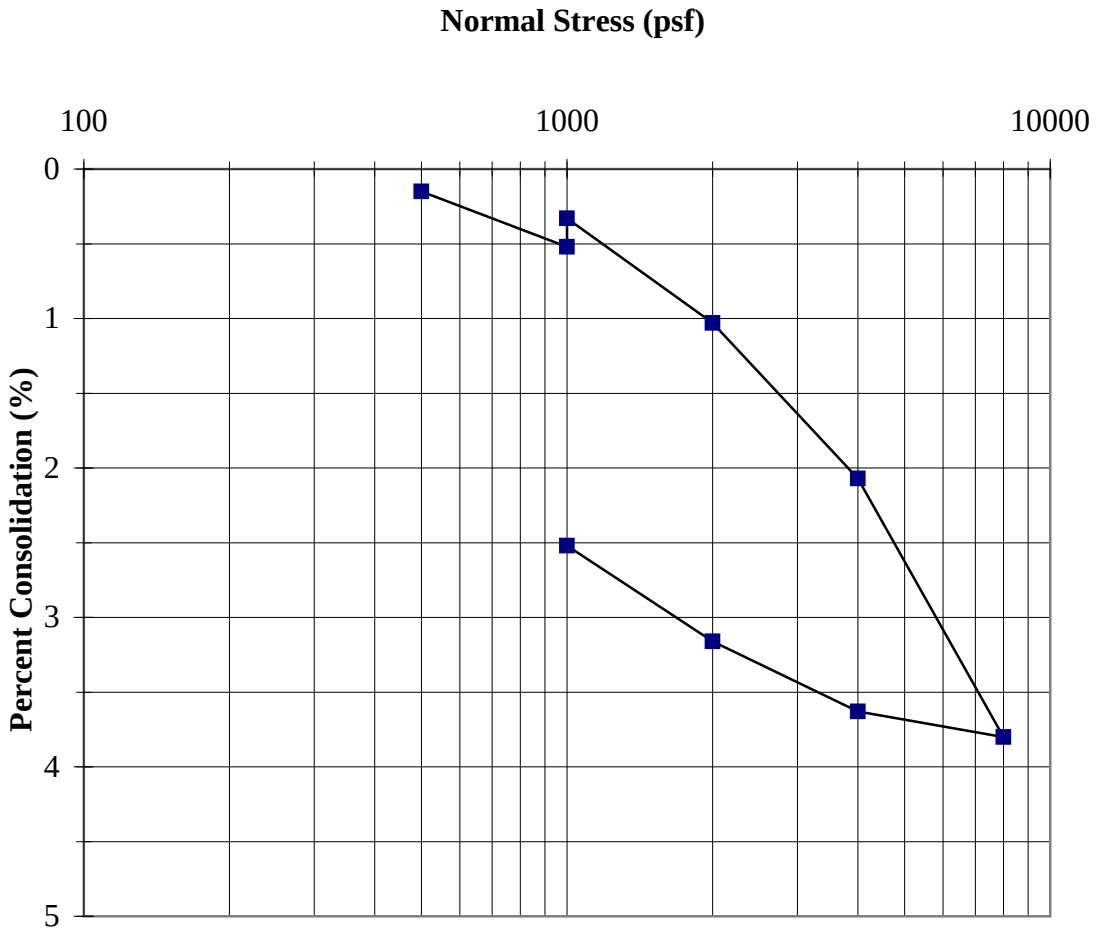
1 - ALLUVIUM; Saturated Moisture Content: 22%, Dry Density: 103 pcf; Ultimate

2 - ALLUVIUM; Saturated Moisture Content: 29%, Dry Density: 94 pcf; Ultimate

SAS	DIRECT SHEAR TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-3

CONSOLIDATION TEST RESULTS

ASTM D 2435 - 90

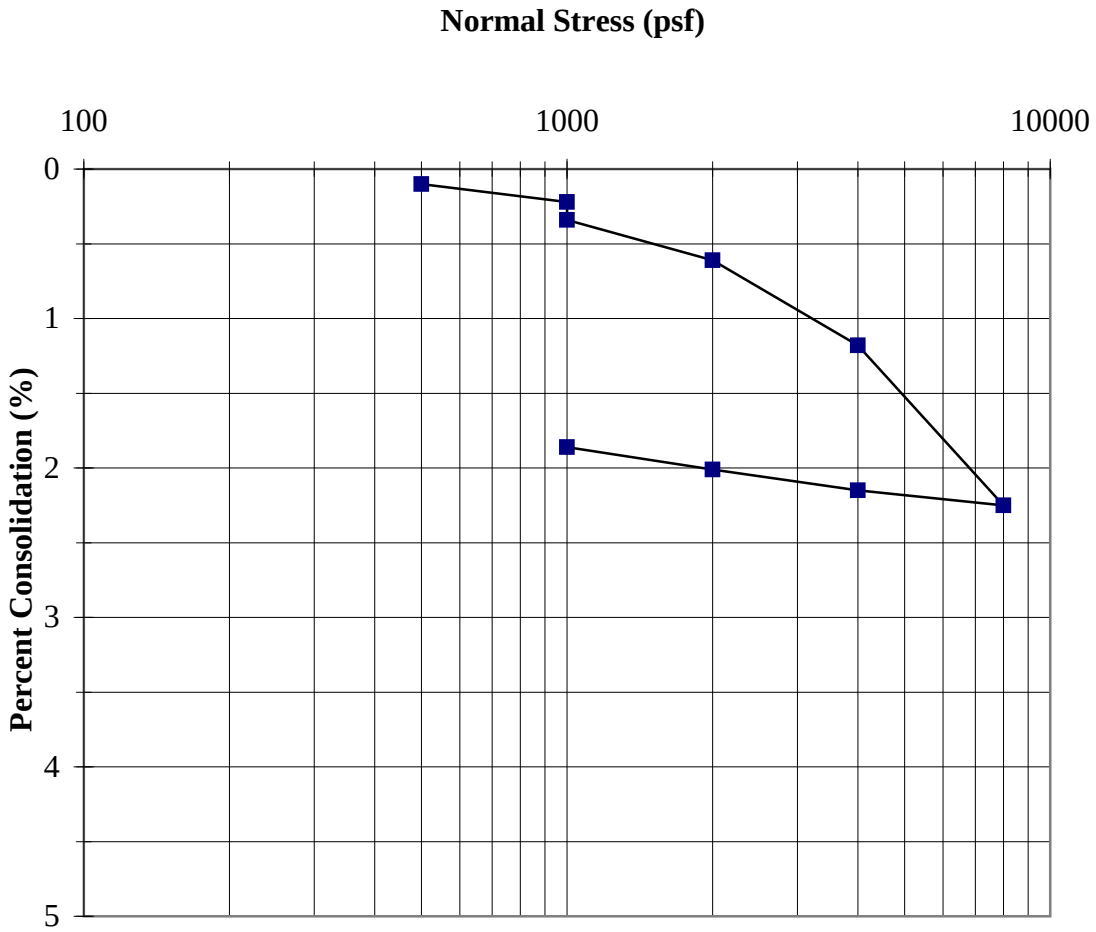


Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Remarks
■	B-2	R-3	15	CL	γ_d = 100.1 pcf, w/c = 24.8%, S = 99.7

SAS	CONSOLIDATION TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-4

CONSOLIDATION TEST RESULTS

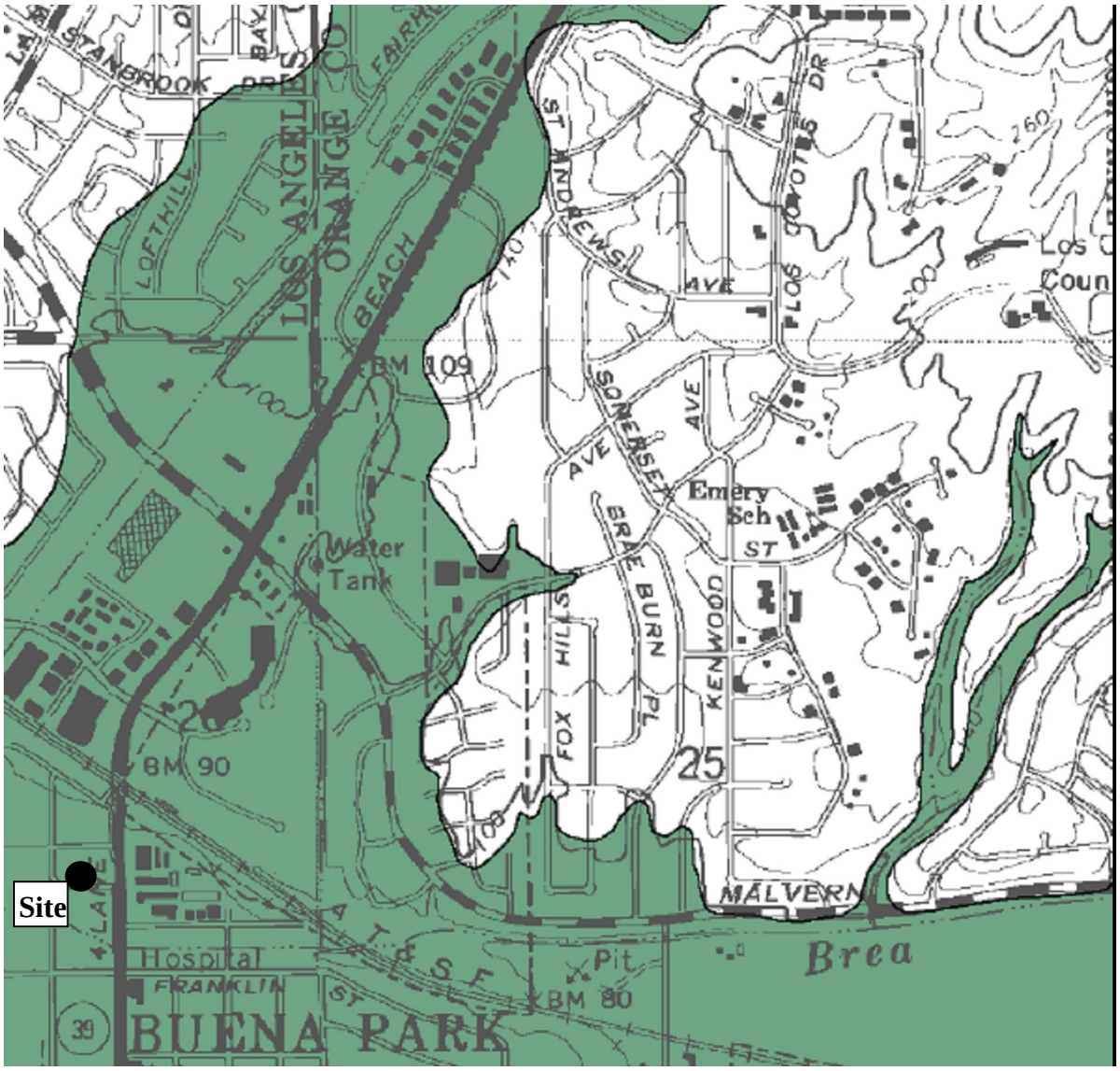
ASTM D 2435 - 90



Symbol	Test Location	Sample Number	Depth (ft)	Soil Type	Remarks
■	B-2	R-4	20	SM	γ_d = 101.7 pcf, w/c = 23.2%, S = 99.9

SAS	CONSOLIDATION TEST RESULTS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE B-5

APPENDIX C



STATE OF CALIFORNIA

SEISMIC HAZARD ZONES

Delineated in compliance with
Chapter 7.8, Division 2 of the California Public Resources Code
(Seismic Hazards Mapping Act)

LA HABRA QUADRANGLE

OFFICIAL MAP
Released: April 15, 1998

MAP EXPLANATION

Zones of Required Investigation:

Liquefaction
Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides
Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

SAS	CALIFORNIA SEISMIC HAZARD ZONES MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE C-1



MAP EXPLANATION

STATE OF CALIFORNIA

SPECIAL STUDIES ZONES

Delineated in compliance with
Chapter 7.5, Division 2 of the California Public Resources Code
(Alquist-Priolo Special Studies Zones Act)

LA HABRA QUADRANGLE

REVISED OFFICIAL MAP

Effective: November 1, 1991

Potentially Active Faults

106 C — Faults considered to have been active during Quaternary time; solid line where accurately located, long dash where approximately located, short dash where inferred, dotted where concealed; query (?) indicates additional uncertainty. Evidence of historic offset indicated by year of earthquake-associated event or C for displacement caused by creep or possible creep.

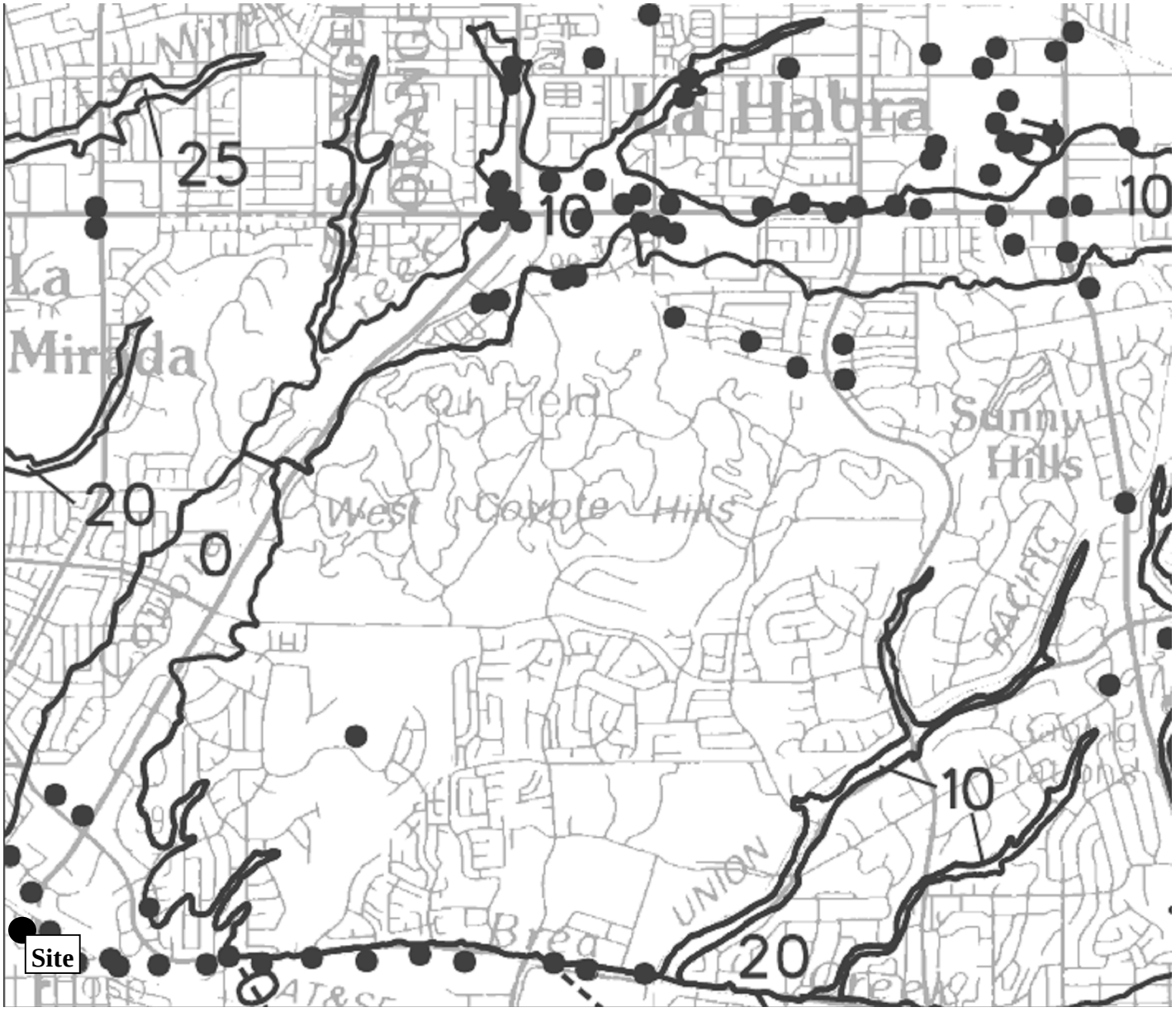
Aerial photo lineaments (not field checked); based on youthful geomorphic and other features believed to be the results of Quaternary faulting.

Special Studies Zone Boundaries

These are delineated as straight-line segments that connect encircled turning points so as to define special studies zone segments.

Seaward projection of zone boundary.

SAS	CALIFORNIA SPECIAL STUDIES ZONES MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE C-2



● Borehole Site

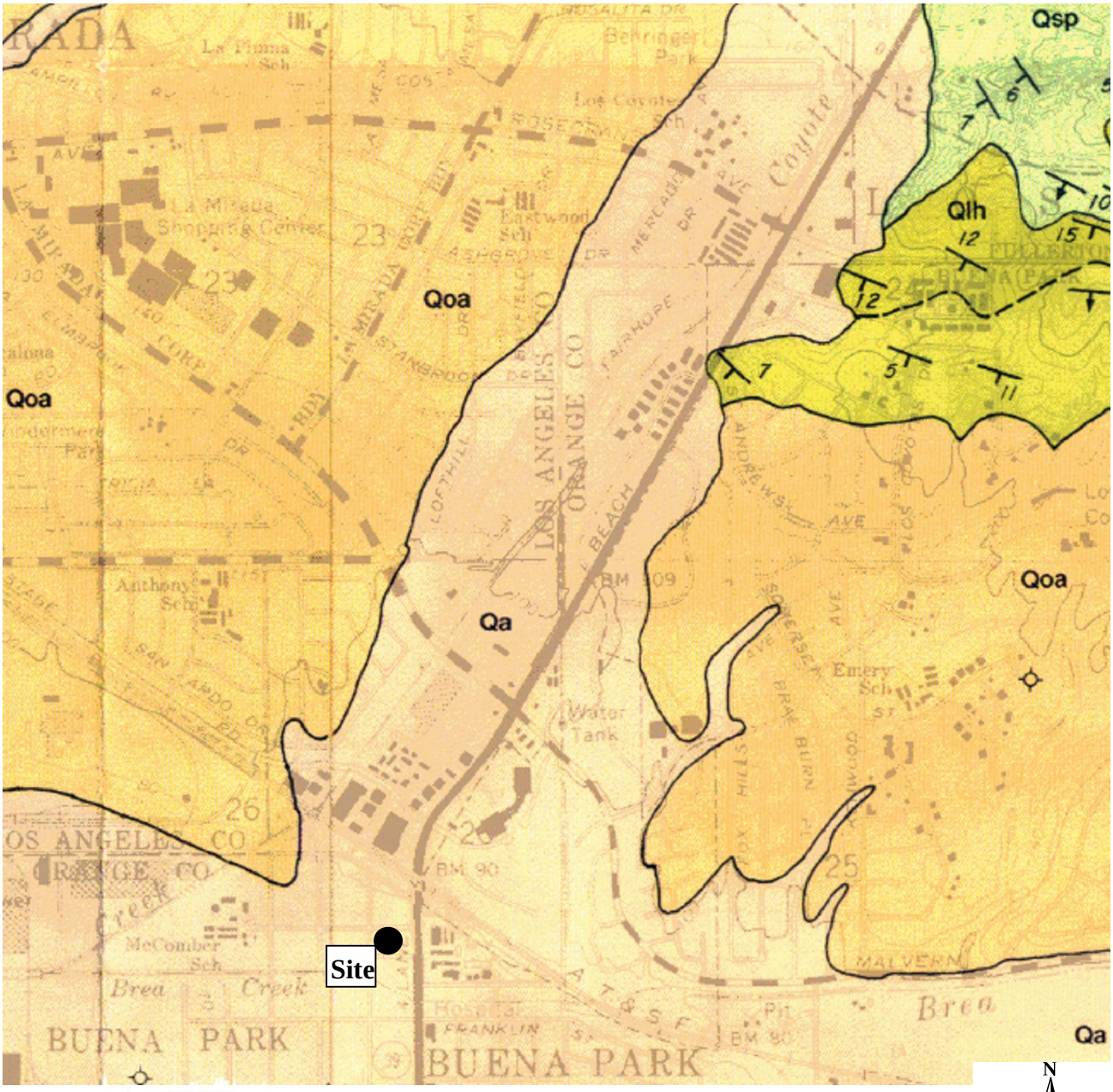
30 Depth to ground water in feet

X Site of historical earthquake–generated liquefaction. See "Areas of Past Liquefaction" discussion in text.

Department of Conservation, Division of Mines And Geology
Seismic Hazard Zone Report For The La Habra 7.5-Minute Quadrangle,
Los Angeles and Orange Counties, California, 1997, SHZR 09

SAS	HISTORICALLY HIGHEST GROUND WATER LEVELS 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE C-3

APPENDIX D



af
Qg
Qa

SURFICIAL SEDIMENTS
undissected alluvial deposits
af *artificial fill, some recent areas may not be shown*
Qg *gravel and sand of major stream channels*
Qa *alluvial gravel, sand and silt of valleys and floodplains*

Dibblee, T.W., Jr., Dibblee Geological Foundation, Geologic Map of Whittier and La Habra Quadrangles, 2001, Map # DF-74

SAS	GEOLOGIC MAP 7682 - 7712 CRAIG AVENUE, BUENA PARK	FIGURE D-1

APPENDIX E

LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	August 8, 2019	Bore Hole:	B-1	Sampler Type:	S	Standard Penetration Test
Address:	7682 -7712 Craig Avenue Buena Park	Distance From Fault (km):	11.41	Sampling Method:	L	With Liners
		Earthquake Magnitude:	7.3	Hammer Type:	A	Automatic
SAS File:	9SMO183	Peak Ground Acceleration:	0.668	Borehole Diam:	115	mm
		Maximum Acceleration:	0.668			
		Depth of Ground Water (ft):	42			
		Historic Water Level (ft):	1			

Calculated Depth		Unit Weight	Total Stress	Effective Stress	Sampler Type	Percent Fines	Field Blows	Correction Factors						Corctd Blows	Cln Snd Eq Blows	Magntd Scaling	Liquefaction Stress Ratio		Hist. Wtr. Effective Stress	Rd	Induced Stress	Safety Factor
								Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type									
		γ	σ	σ'			N							$N_{1\text{-}60}$	$N_{1\text{-}60CS}$		M=7.5	M=7.3	σ'_{HIST}			
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	C_N	C_E	C_B	C_R	C_S	C_{SPT}	(B/ft)	(B/ft)				(psf)			
2.5		120.0	300.0	300	S	71.9	16	1.70	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	206	0.996	0.629	NL
7.5		120.0	900	900	S	83.1	17	1.49	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	494	0.988	0.781	NL
12.5		120.0	1500	1500	S	89.5	14	1.15	1.20	1.00	0.85	1.0	1.00	16	24	1.10	0.277	0.303	782	0.979	0.815	0.37
17.5		120.0	2100	2100	S	36.6	21	0.98	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1070	0.967	0.824	NL
22.5		120.0	2700	2700	S	49.8	23	0.86	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1358	0.952	0.822	NL
27.5		120.0	3300	3300	S	55.7	27	0.78	1.20	1.00	0.95	1.0	1.00	24	34	1.10	5.246	5.749	1646	0.933	0.812	NL
32.5		120.0	3900	3900	S	43.1	33	0.72	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	1934	0.909	0.795	NL
37.5		120.0	4500	4500	S	61.5	21	0.67	1.20	1.00	1.00	1.0	1.00	17	25	1.10	0.300	0.329	2222	0.878	0.772	0.43
42.5	*	120.0	5100	5069	S	50.3	77	0.63	1.20	1.00	1.00	1.0	1.00	58	75	1.10	0.523	0.573	2510	0.841	0.742	NL
47.5	*	120.0	5700	5357	S	66.1	47	0.61	1.20	1.00	1.00	1.0	1.00	34	46	1.10	0.250	0.274	2798	0.796	0.704	NL
50.0	*	120.0	6000	5501	S	8	51	0.60	1.20	1.00	1.00	1.0	1.00	37	38	1.10	0.009	0.010	2942	0.771	0.682	NL

* - Sampled Below Ground Water Level

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183L1.xls

SAS	LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-1) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE E-1

LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	August 8, 2019	Bore Hole:	B-2	Sampler Type:	S	Standard Penetration Test
Address:	7682 -7712 Craig Avenue Buena Park	Distance From Fault (km):	11.41	Sampling Method:	L	With Liners
		Earthquake Magnitude:	7.3	Hammer Type:	A	Automatic
SAS File:	9SMO183	Peak Ground Acceleration:	0.668	Borehole Diam:	115	mm
		Maximum Acceleration:	0.668			
		Depth of Ground Water (ft):	42			
		Historic Water Level (ft):	1			

Calculated Depth		Unit Weight	Total Stress	Effective Stress	Sampler Type	Percent Fines	Field Blows	Correction Factors						Corctd Blows	Cln Snd Eq Blows	Magntd Scaling	Liquefaction Stress Ratio		Hist. Wtr. Effective Stress	Rd	Induced Stress	Safety Factor
								Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type									
		γ	σ	σ'			N							$N_{1\text{-}60}$	$N_{1\text{-}60CS}$		M=7.5	M=7.3	σ'_{HIST}			
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	C_N	C_E	C_B	C_R	C_S	C_{SPT}	(B/ft)	(B/ft)				(psf)		Ratio	
2.5		120.0	300.0	300	S	69.3	15	1.70	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	206	0.996	0.629	NL
7.5		120.0	900	900	S	87.3	18	1.49	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	494	0.988	0.781	NL
12.5		120.0	1500	1500	S	93.4	20	1.15	1.20	1.00	0.85	1.0	1.00	24	34	1.10	5.246	5.749	782	0.979	0.815	NL
17.5		120.0	2100	2100	S	6.6	19	0.98	1.20	1.00	0.95	1.0	1.00	21	21	1.10	0.231	0.253	1070	0.967	0.824	0.31
22.5		120.0	2700	2700	S	31	31	0.86	1.20	1.00	0.95	1.0	1.00	30	40	1.10	0.112	0.123	1358	0.952	0.822	NL
27.5		120.0	3300	3300	S	4.9	37	0.78	1.20	1.00	0.95	1.0	1.00	33	33	1.10	1.240	1.359	1646	0.933	0.812	NL
32.5		120.0	3900	3900	S	57.7	28	0.72	1.20	1.00	1.00	1.0	1.00	24	34	1.10	5.246	5.749	1934	0.909	0.795	NL
37.5		120.0	4500	4500	S	32.1	27	0.67	1.20	1.00	1.00	1.0	1.00	22	31	1.10	0.518	0.567	2222	0.878	0.772	NL
42.5	*	120.0	5100	5069	S	36.9	15	0.63	1.20	1.00	1.00	1.0	1.00	11	18	1.10	0.194	0.213	2510	0.841	0.742	0.29
47.5	*	120.0	5700	5357	S	52.5	29	0.61	1.20	1.00	1.00	1.0	1.00	21	30	1.10	0.482	0.529	2798	0.796	0.704	NL
50.0	*	120.0	6000	5501	S	36.6	39	0.60	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	2942	0.771	0.682	NL

* - Sampled Below Ground Water Level

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183L2.xls

SAS	LIQUEFACTION ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-2) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE E-2

BORE HOLE B-1

Sample No.	Depth of Sampling (ft)	Fines Passing #200 Sieve (%)
1	2.5	71.9
2	7.5	83.1
3	12.5	89.5
4	17.5	36.6
5	22.5	49.8
6	27.5	55.7
7	32.5	43.1
8	37.5	61.5
9	42.5	50.3
10	47.5	66.1
11	50	8.0

BORE HOLE B-2

Sample No.	Depth of Sampling (ft)	Fines Passing #200 Sieve (%)
1	2.5	69.3
2	7.5	87.3
3	12.5	93.4
4	17.5	6.6
5	22.5	31.0
6	27.5	4.9
7	32.5	57.7
8	37.5	32.1
9	42.5	36.9
10	47.5	52.5
11	50	36.6

APPENDIX F

SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	September 19, 2019	Bore Hole:	B-1		
Address:	7682 -7712 Craig Avenue	Distance From Fault (km):	11.41	Sampler Type:	S Standard Penetration Test
	Buena Park	Earthquake Magnitude:	7.3	Sampling Method:	L With Liners
SAS File:	9SMO183	Peak Ground Acceleration:	0.668	Hammer Type:	A Automatic
		Maximum Acceleration:	0.668	Borehole Diam:	115 mm
		Depth of Ground Water (ft):	42		
		Historic Water Level (ft):	1		

Calculated Depth		Unit Weight γ	Total Stress σ	Effective Stress σ'	Sampler Type	Percent Fines	Field Blows N	Correction Factors: Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type	Corctd Blows $N_{1\text{-}60}$	Cln Snd Eq Blows $N_{1\text{-}60CS}$	Magntd Scaling Factor	Liquefaction Stress Ratio M=7.5	M=7.3	Hist. Wtr. Effective Stress σ'_{HIST}	Rd	Induced Stress Ratio	Safety Factor	Vlmtrc Strain	Stlmnt per Layer
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	CN	CE	CB	CR	CS	C_{SPT}	(B/ft)	(B/ft)				(psf)				(%)	(in)
2.5		120.0	300	300	S	71.9	16	1.70	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	206	0.996	0.629	NL	0.00	0.00
7.5		120.0	900	900	S	83.1	17	1.49	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	494	0.988	0.781	NL	0.00	0.00
12.5		120.0	1500	1500	S	89.5	14	1.15	1.20	1.00	0.85	1.0	1.00	16	24	1.10	0.277	0.303	782	0.979	0.815	0.37	2.00	1.20
17.5		120.0	2100	2100	S	36.6	21	0.98	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1070	0.967	0.824	NL	0.00	0.00
22.5		120.0	2700	2700	S	49.8	23	0.86	1.20	1.00	0.95	1.0	1.00	23	33	1.10	0.951	1.042	1358	0.952	0.822	NL	0.00	0.00
27.5		120.0	3300	3300	S	55.7	27	0.78	1.20	1.00	0.95	1.0	1.00	24	34	1.10	5.246	5.749	1646	0.933	0.812	NL	0.00	0.00
32.5		120.0	3900	3900	S	43.1	33	0.72	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	1934	0.909	0.795	NL	0.00	0.00
37.5		120.0	4500	4500	S	61.5	21	0.67	1.20	1.00	1.00	1.0	1.00	17	25	1.10	0.300	0.329	2222	0.878	0.772	0.43	1.40	0.84
42.5	*	120.0	5100	5069	S	50.3	77	0.63	1.20	1.00	1.00	1.0	1.00	58	75	1.10	0.523	0.573	2510	0.841	0.742	NL	0.00	0.00
47.5	*	120.0	5700	5357	S	66.1	47	0.61	1.20	1.00	1.00	1.0	1.00	34	46	1.10	0.250	0.274	2798	0.796	0.704	NL	0.00	0.00
50.0	*	120.0	6000	5501	S	8	51	0.60	1.20	1.00	1.00	1.0	1.00	37	38	1.10	0.009	0.010	2942	0.771	0.682	NL	0.00	0.00

* - Sampled Below Ground Water Level

Total Settlement 2.04

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183S1.xls

SAS	SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-1) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE F-1

SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS (2,475 YEAR RETURN PERIOD)

Date:	September 19, 2019	Bore Hole:	B-2				
Address:	7682 -7712 Craig Avenue	Distance From Fault (km):	11.41	Sampler Type:	S	Standard Penetration Test	
	Buena Park	Earthquake Magnitude:	7.3	Sampling Method:	L	With Liners	
SAS File:	9SMO183	Peak Ground Acceleration:	0.668	Hammer Type:	A	Automatic	
		Maximum Acceleration:	0.668	Borehole Diam:	115	mm	
		Depth of Ground Water (ft):	42				
		Historic Water Level (ft):	1				

Calculated Depth		Unit Weight γ	Total Stress σ	Effective Stress σ'	Sampler Type	Percent Fines	Field Blows N	Correction Factors: Depth	Energy	Boring Diam.	Rod Length	Sampling Method	Sampler Type	Corctd Blows $N_{1\text{-}60}$	Cln Snd Eq Blows $N_{1\text{-}60CS}$	Magntd Scaling Factor	Liquefaction Stress Ratio M=7.5	M=7.3	Hist. Wtr. Effective Stress σ'_{HIST}	Rd	Induced Stress Ratio	Safety Factor	Vlmtrc Strain	Stlmnt per Layer
(ft)		(pcf)	(psf)	(psf)		(%)	(B/ft)	CN	CE	CB	CR	CS	C_{SPT}	(B/ft)	(B/ft)				(psf)				(%)	(in)
2.5		120.0	300	300	S	69.3	15	1.70	1.20	1.00	0.75	1.0	1.00	23	33	1.10	0.951	1.042	206	0.996	0.629	NL	0.00	0.00
7.5		120.0	900	900	S	87.3	18	1.49	1.20	1.00	0.75	1.0	1.00	24	34	1.10	5.246	5.749	494	0.988	0.781	NL	0.00	0.00
12.5		120.0	1500	1500	S	93.4	20	1.15	1.20	1.00	0.85	1.0	1.00	24	34	1.10	5.246	5.749	782	0.979	0.815	NL	0.00	0.00
17.5		120.0	2100	2100	S	6.6	19	0.98	1.20	1.00	0.95	1.0	1.00	21	21	1.10	0.231	0.253	1070	0.967	0.824	0.31	1.55	0.93
22.5		120.0	2700	2700	S	31	31	0.86	1.20	1.00	0.95	1.0	1.00	30	40	1.10	0.112	0.123	1358	0.952	0.822	NL	0.00	0.00
27.5		120.0	3300	3300	S	4.9	37	0.78	1.20	1.00	0.95	1.0	1.00	33	33	1.10	1.240	1.359	1646	0.933	0.812	NL	0.00	0.00
32.5		120.0	3900	3900	S	57.7	28	0.72	1.20	1.00	1.00	1.0	1.00	24	34	1.10	5.246	5.749	1934	0.909	0.795	NL	0.00	0.00
37.5		120.0	4500	4500	S	32.1	27	0.67	1.20	1.00	1.00	1.0	1.00	22	31	1.10	0.518	0.567	2222	0.878	0.772	NL	0.00	0.00
42.5	*	120.0	5100	5069	S	36.9	15	0.63	1.20	1.00	1.00	1.0	1.00	11	18	1.10	0.194	0.213	2510	0.841	0.742	0.29	1.90	1.14
47.5	*	120.0	5700	5357	S	52.5	29	0.61	1.20	1.00	1.00	1.0	1.00	21	30	1.10	0.482	0.529	2798	0.796	0.704	NL	0.00	0.00
50.0	*	120.0	6000	5501	S	36.6	39	0.60	1.20	1.00	1.00	1.0	1.00	28	39	1.10	0.064	0.070	2942	0.771	0.682	NL	0.00	0.00

* - Sampled Below Ground Water Level

Total Settlement 2.07

Notes: For calculation purposes all the fines passing #200 sieve considered to be silts and potentially liquefiable

9smo183S2.xls

SAS	SEISMIC SETTLEMENT ANALYSIS: 2% EXCEEDANCE IN 50 YEARS; BORING B-2) 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE F-2

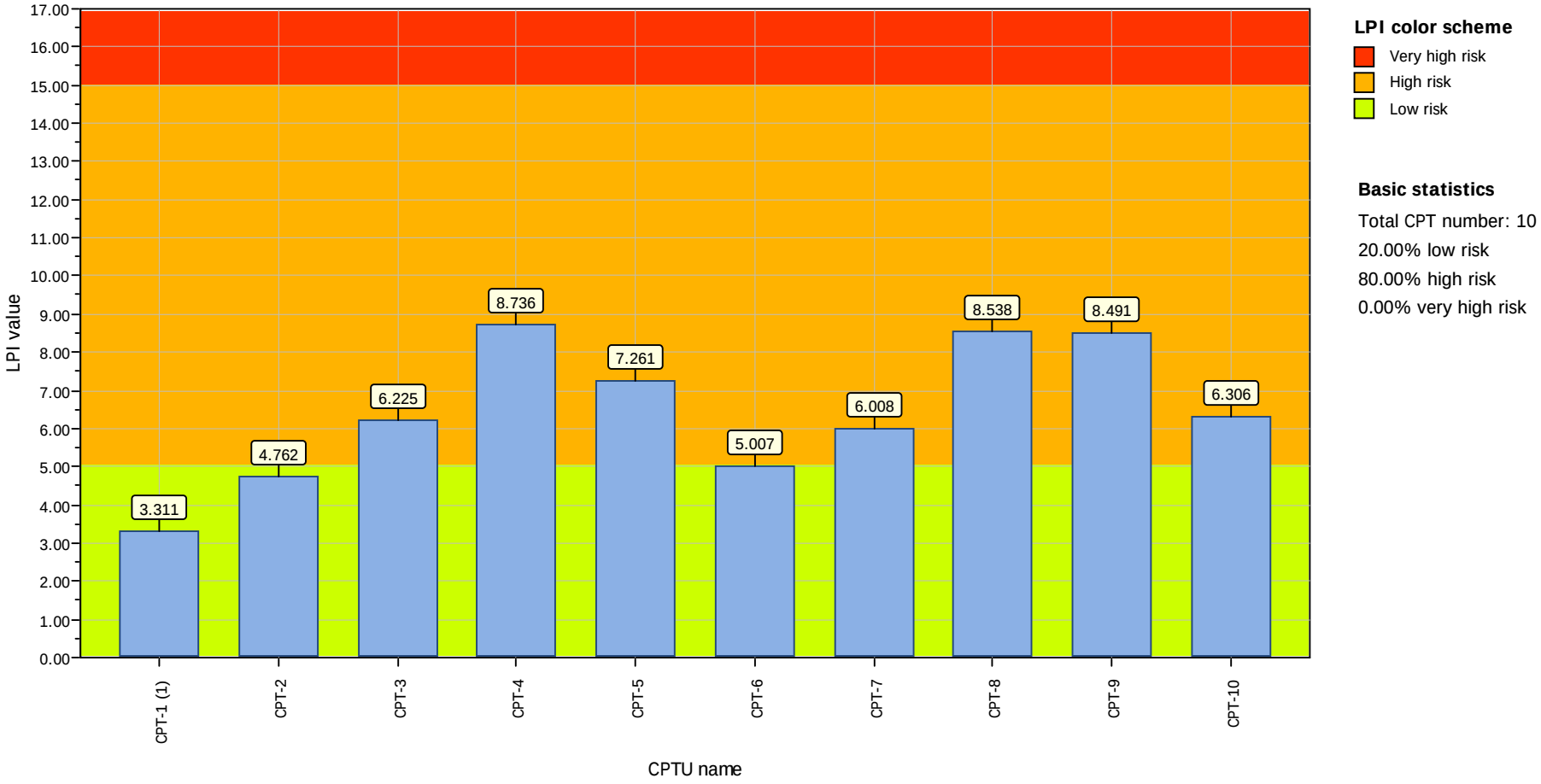
APPENDIX G

SASSAN Geosciences, Inc
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869
sasgeoinc@aol.com

Project title :

Location :

Overall Liquefaction Potential Index report



LPI color scheme

- Very high risk
- High risk
- Low risk

Basic statistics

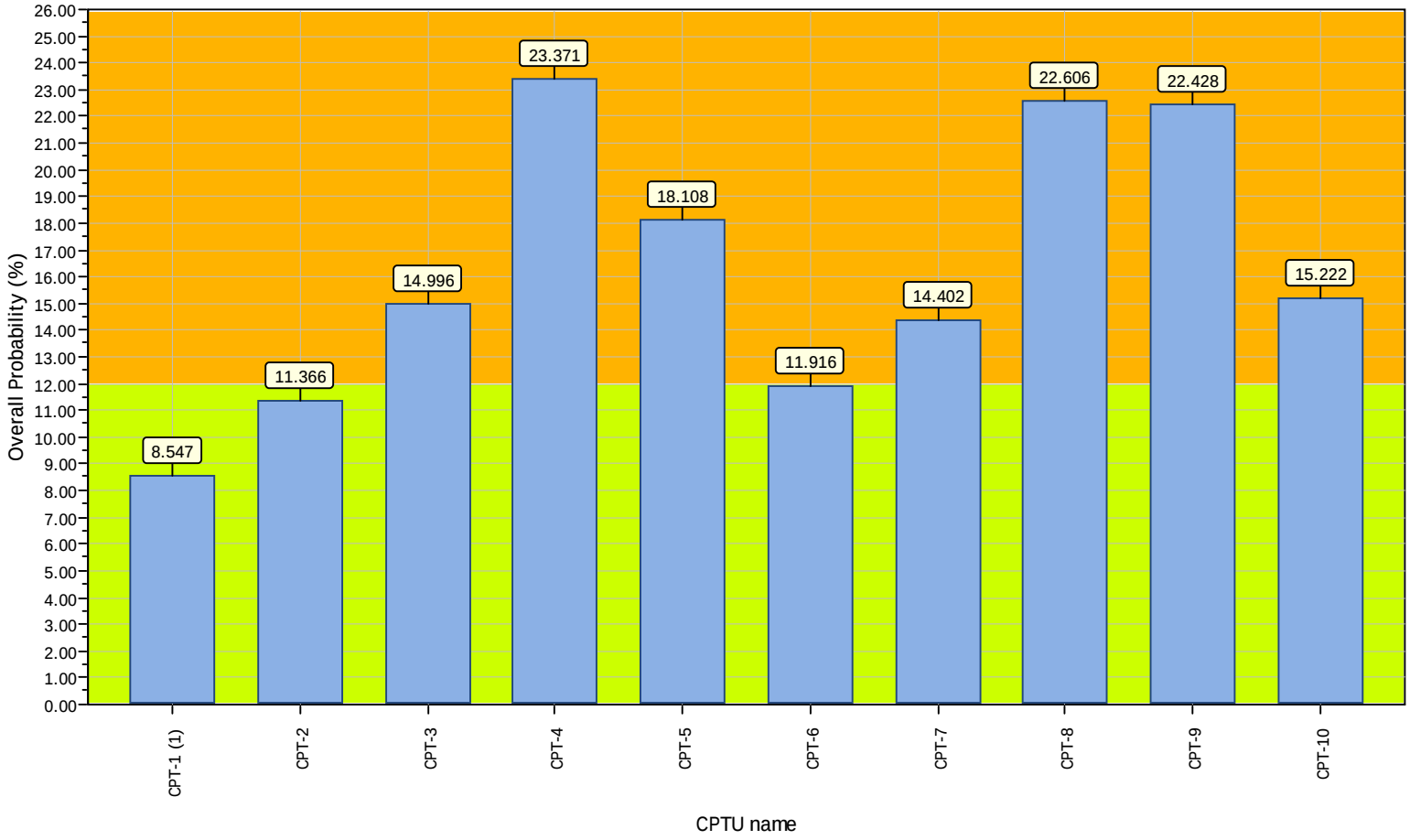
Total CPT number: 10
20.00% low risk
80.00% high risk
0.00% very high risk

SASSAN Geosciences, Inc
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869
sasgeoinc@aol.com

Project title :

Location :

Overall Probability for Liquefaction report



Probability color scheme

- Very High Probability
- High Probability
- Low Probability

Basic statistics

Total CPT number: 10
20.00% low probability
80.00% high probability
0.00% very high probability

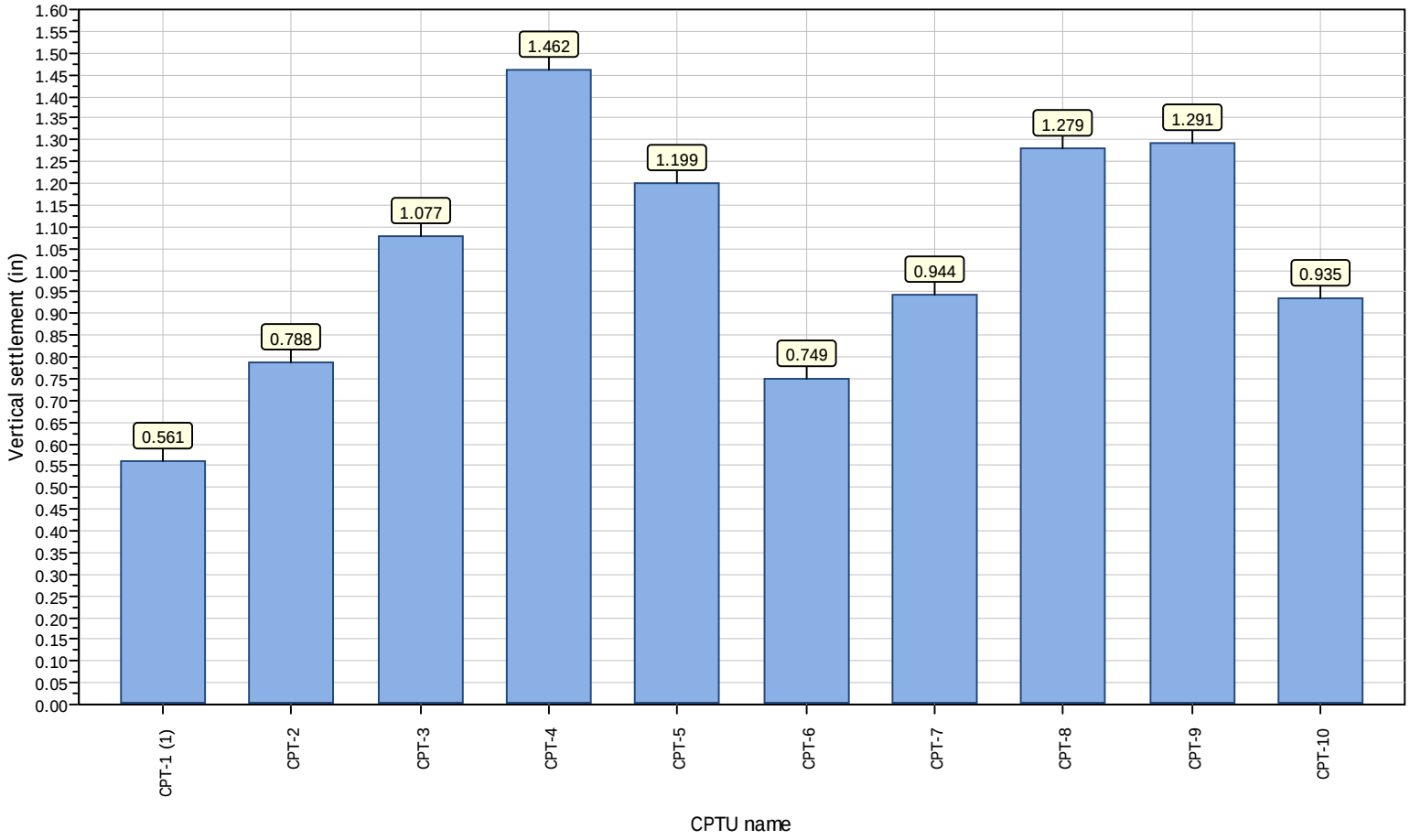
APPENDIX H

SASSAN Geosciences, Inc
1290 North Lake Avenue, Suite 204
Pasadena, California 91104-2869
sasgeoinc@aol.com

Project title :

Location :

Overall vertical settlements report



APPENDIX I

CONSOLIDATION SETTLEMENT CALCULATION
UNDER CONTINUOUS FOOTINGS
(WITH GROUND WATER)

Linear weight on footing, **W** =	134,000	plf
Width of footing, **B** =	67.0	ft
Applied pressure from load, **P** =	2,000	psf
Depth of footing, **D** =	12.0	ft
Depth of watertable, dw =	12.5	ft

Strata Data:

Layer No.	γ_d Dry Unit Weight (pcf)	ω_c Moisture Content (%)	d Depth of Sampling (ft)	H Thickness of Layer (ft)	Percent Consolid. (%)
1	100	18	15	17.5	1.079522
2	102	7	20	5	0.578357
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	

Settlement Calculations:

Layer No.	γ_t/γ_b Density of Layer (pcf)	Z Center of Layer (ft)	α Angle (rad)	P_0' Normal Stress (psf)	Δp Applied Pressure (psf)	ΔH Settlement in Layer (in)
1	118	14.75	2.978	1,741	1999.5	0.065
	56	15	2.963	1,614	1999.4	0.648
2	47	20	2.673	1,870	1989.2	0.347
3						
4						
5						
6						

Total Settlement D**H** = 1.059 in

SAS	CONSOLIDATION SETTLEMENT CALCULATION 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE I-1

CONSOLIDATION SETTLEMENT CALCULATION
UNDER CONTINUOUS FOOTINGS
(WITH GROUND WATER)

Linear weight on footing, **W** =	60,000	plf
Width of footing, **B** =	20.0	ft
Applied pressure from load, **P** =	3,000	psf
Depth of footing, **D** =	12.0	ft
Depth of watertable, dw =	12.5	ft

Strata Data:

Layer No.	γ_d Dry Unit Weight (pcf)	ω_c Moisture Content (%)	d Depth of Sampling (ft)	H Thickness of Layer (ft)	Percent Consolid. (%)
1	100	18	15	17.5	1.591463
2	102	7	20	5	0.794074
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	

Settlement Calculations:

Layer No.	γ_t/γ_b Density of Layer (pcf)	Z Center of Layer (ft)	α Angle (rad)	P_0' Normal Stress (psf)	Δp Applied Pressure (psf)	ΔH Settlement in Layer (in)
1	118	14.75	2.605	1,741	2975.7	0.095
	56	15	2.559	1,614	2969.0	0.955
2	47	20	1.792	1,870	2643.0	0.476
3						
4						
5						
6						

Total Settlement D**H** = 1.527 in

SAS	CONSOLIDATION SETTLEMENT CALCULATION 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE I-2

W - Linear Weight on Footing (plf)

P - Applied Pressure (psf)

B - Width of Footing (ft)

D - Depth of Footing (ft)

H - Height of Layer (ft)

Z - Distance from Surface to Center of Layer (ft)

ΔH - Settlement of Soil (in)

α - Angle Between Center of Layer and Edges of Footing (radians)

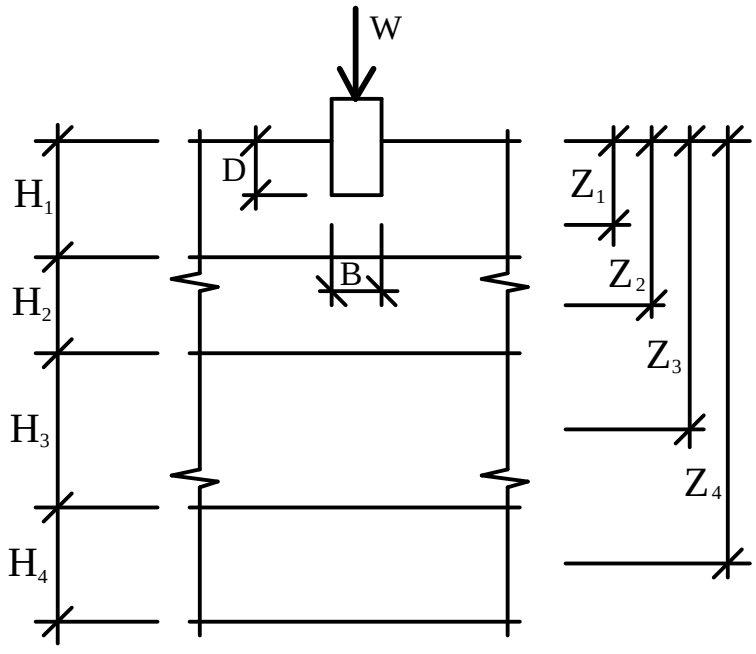
γ_d - Dry Density (pcf)

γ_t - Total Density (pcf)

ω_c - Field Moisture Content (%)

P_0' - Effective Normal Stress (psf)

Δp - Applied Pressure (change) (psf)



SAS	SYMBOL DESIGNATION 7682 -7712 CRAIG AVENUE, BUENA PARK	FIGURE I-3

APPENDIX J

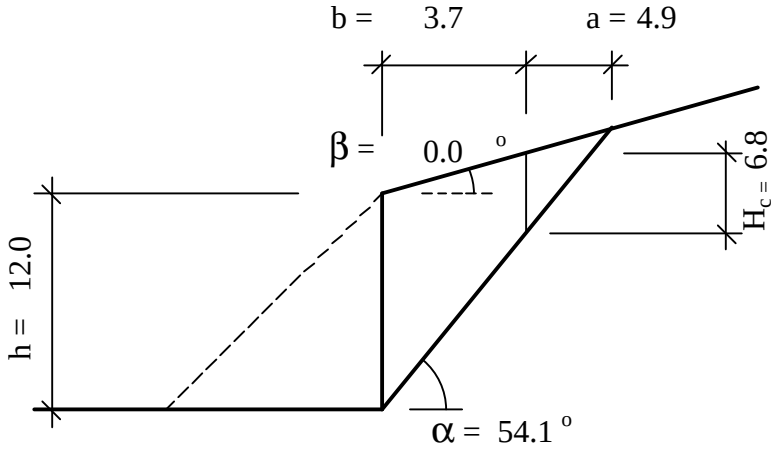
STABILITY OF TEMPORARY EXCAVATIONS

FOR 12 FEET HIGH EXCAVATION

(ALLOWABLE SPACING BETWEEN SHORING PILES OF BASEMENT RETAINING WALLS)

Data:

Height of Cut,	h =	12.0 ft
Slope Angle,	β =	0.0 deg
Density of Soil,	γ_s =	121 pcf
Cohesion,	C =	480 psf
Friction Angle,	ϕ =	21 deg
Factor of Safety,	F.S. =	1.25



Maximum Width of Slot:

$$d = \frac{1/3 * \gamma_s * K_o * \tan\phi * (h^2 * (a + b) - H_c^2 * a) + 2A*C}{(F.S.) * W * \sin\alpha * \cos\alpha - W * \cos^2\alpha * \tan\phi - C * b}$$

Determination of the components of equation:

Slide plane angle,	α =	54.1 deg	(Search for Critical Failure Plane)
Location of Tension Crack	a =	4.9 ft	
Length of Wedge,	b =	3.7 ft	
Height of Tension Crack,	H_c =	6.8 ft	
Area of Wedge,	$A = b * (h + H_c) / 2$ =	35.2	ft^2
Weight of Wedge,	$W = A * \gamma_s$ =	4255	lbs
Coef. of latteral pressure,	$K_o = 1 - \sin\phi$ =	0.64	

$$d = \frac{1/3 * 121 * 0.64 * \tan 21 * (12 * 12 * (4.9 + 3.7) - 6.8 * 6.8 * 4.9) + 2 * 480 * 35.2}{1.25 * 4255.2 * \sin 54.1 * \cos 54.1 - 4255.2 * \cos 54.1 * \cos 54.1 * \tan 21 - 480 * 3.7}$$

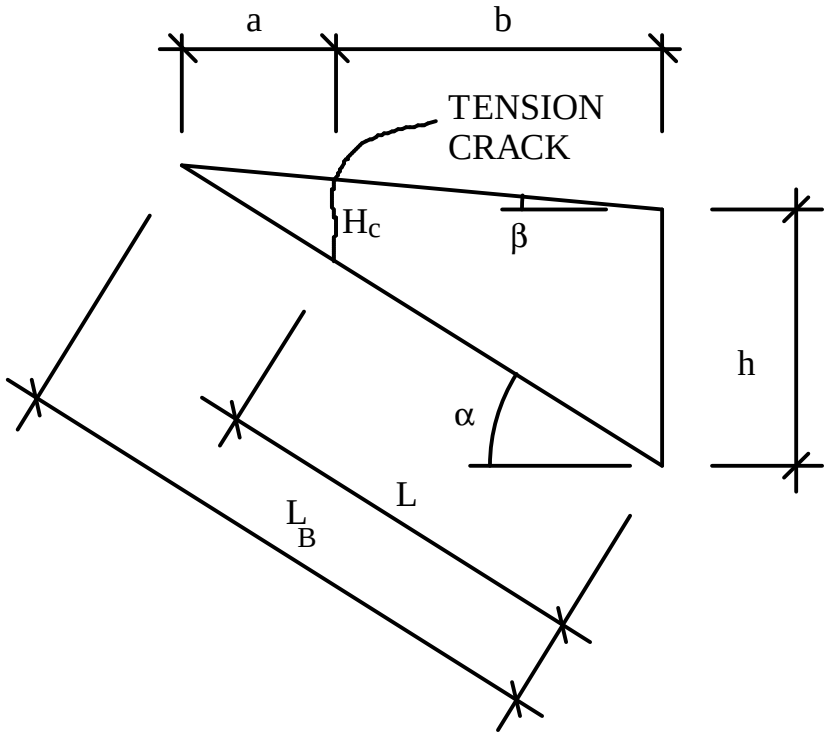
$$d = \frac{43877.9}{172.3} = 254.7 \text{ ft}$$

Maximum Allowable Spacing Between Piles is 254 Feet

TENSION CRACK LOCATION
FOR 12 FEET HIGH EXCAVATION

DATA:

Soil Density,	γ_s = 121	pcf
Cohesion,	C = 480	psf
Friction Angle,	ϕ = 21	degrees
Surface Angle,	β = 0.0	degrees
Fail. Plane Angle,	α = 54.1	degrees
Height of Cut,	h = 12.0	ft
Factor of Safety, F.S.=	1.5	



HEIGHT AND LOCATION OF TENSION CRACK:

Total Length of Block,	$L_B = (h * \cos\beta) / (\sin(\alpha - \beta))$ =	14.8	ft
Height of Crack,	$H_c = C / (\gamma_s * \cos\alpha * (\sin\alpha * F.S. - \cos\alpha * \tan\phi))$ =	6.8	ft
Location of Crack,	$a = H_c / (\tan\alpha - \tan\beta)$ =	4.9	ft
Location of Crack,	$b = L_B * \cos\alpha - H_c / (\tan\alpha - \tan\beta)$ =	3.7	ft
Length of Failure Plane,	$L = b / \cos\alpha$ =	6.4	ft

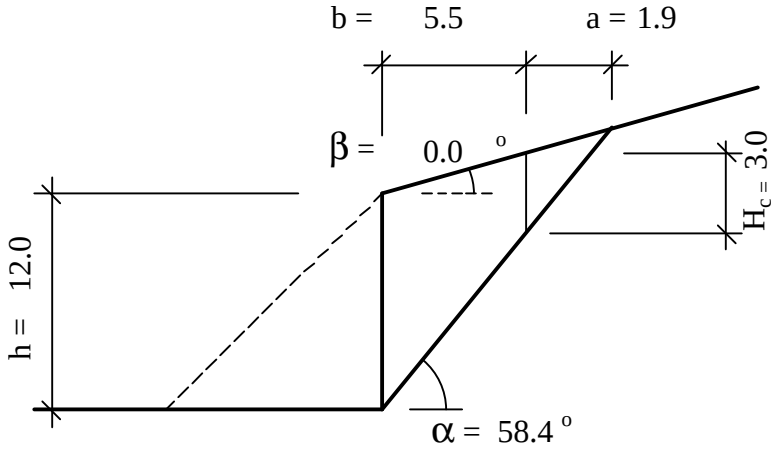
STABILITY OF TEMPORARY EXCAVATIONS

FOR 12 FEET HIGH EXCAVATION

(ALLOWABLE SPACING BETWEEN SHORING PILES OF BASEMENT RETAINING WALLS)

Data:

Height of Cut,	h =	12.0 ft
Slope Angle,	β =	0.0 deg
Density of Soil,	γ_s =	126 pcf
Cohesion,	C =	190 psf
Friction Angle,	ϕ =	32 deg
Factor of Safety,	F.S. =	1.25



Maximum Width of Slot:

$$d = \frac{1/3 * \gamma_s * K_o * \tan\phi * (h^2 * (a + b) - H_c^2 * a) + 2A*C}{(F.S.) * W * \sin\alpha * \cos\alpha - W * \cos^2\alpha * \tan\phi - C * b}$$

Determination of the components of equation:

Slide plane angle,	α = 58.4 deg	(Search for Critical Failure Plane)	
Location of Tension Crack	a = 1.9 ft		
Length of Wedge,	b = 5.5 ft		
Height of Tension Crack,	H_c = 3.0 ft		
Area of Wedge,	$A = b * (h + H_c) / 2$ =	41.4	ft^2
Weight of Wedge,	$W = A * \gamma_s$ =	5216	lbs
Coef. of latteral pressure,	$K_o = 1 - \sin\phi$ =	0.47	

$$d = \frac{1/3 * 126 * 0.47 * \tan 32 * (12 * 12 * (1.9 + 5.5) - 3 * 3 * 1.9) + 2 * 190 * 41.4}{1.25 * 5216.1 * \sin 58.4 * \cos 58.4 - 5216.1 * \cos 58.4 * \cos 58.4 * \tan 32 - 190 * 5.5}$$

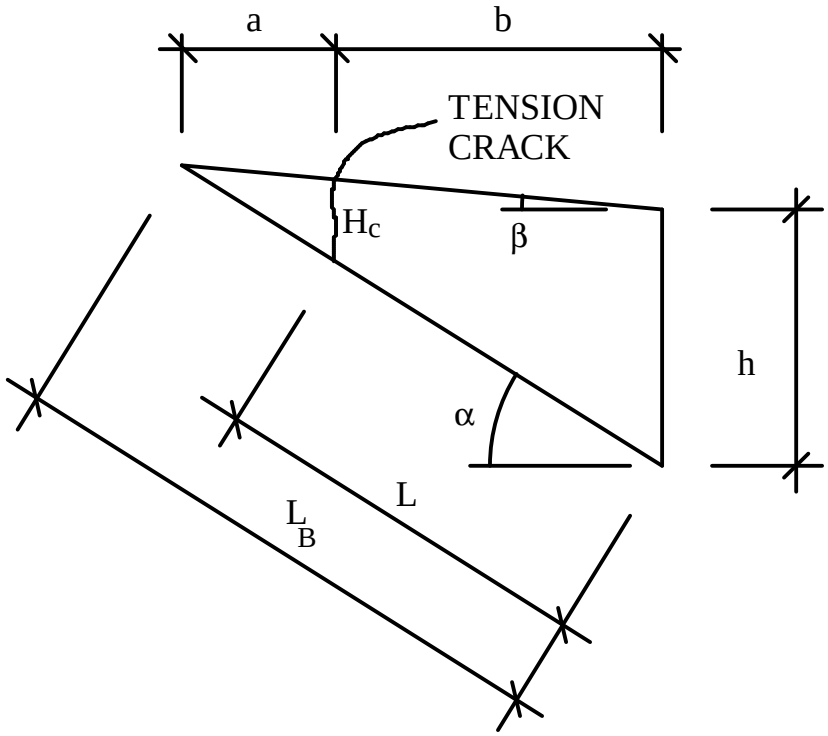
$$d = \frac{28612.4}{968.3} = 29.5 \text{ ft}$$

Maximum Allowable Spacing Between Piles is 29 Feet

TENSION CRACK LOCATION
FOR 12 FEET HIGH EXCAVATION

DATA:

Soil Density,	γ_s = 126	pcf
Cohesion,	C = 190	psf
Friction Angle,	ϕ = 32	degrees
Surface Angle,	β = 0.0	degrees
Fail. Plane Angle,	α = 58.4	degrees
Height of Cut,	h = 12.0	ft
Factor of Safety, F.S.=	1.5	



HEIGHT AND LOCATION OF TENSION CRACK:

Total Length of Block,	$L_B = (h * \cos\beta) / (\sin(\alpha - \beta))$ =	14.1 ft
Height of Crack,	$H_c = C / (\gamma_s * \cos\alpha * (\sin\alpha * F.S. - \cos\alpha * \tan\phi))$ =	3.0 ft
Location of Crack,	$a = H_c / (\tan\alpha - \tan\beta)$ =	1.9 ft
Location of Crack,	$b = L_B * \cos\alpha - H_c / (\tan\alpha - \tan\beta)$ =	5.5 ft
Length of Failure Plane,	$L = b / \cos\alpha$ =	10.5 ft

APPENDIX K

LATERAL LOAD DISTRIBUTION FOR SHORING

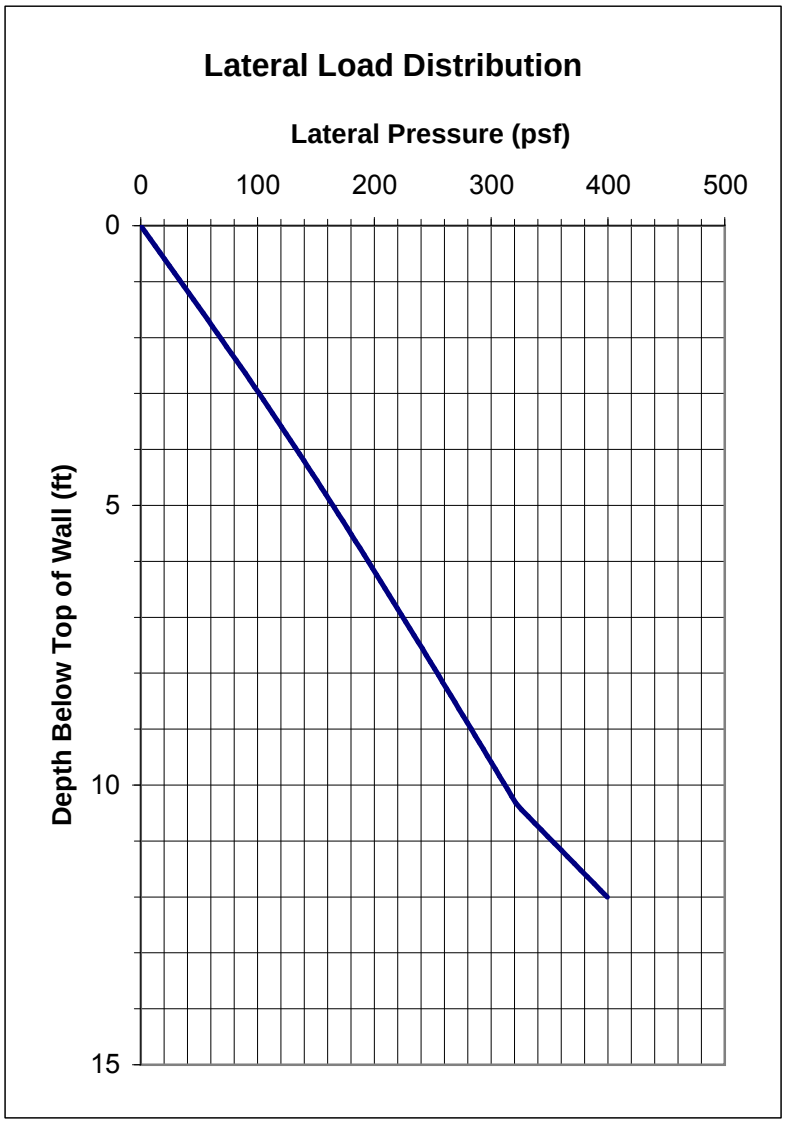
CANTILEVERED 12 FOOT HIGH SHORING

SURCHARGED BY NEIGHBORING PARKING LOT

Initial Input:

Soil and Shoring Data:

Shoring Type - Cantilever		C	
Height of Shoring	H =	12	ft
Total Density	γ_t =	126	pcf
Saturated Density	γ_s =	126	pcf
Cohesion	C =	190	psf
Friction Angle	ϕ =	32	deg
Depth of Water Table	d_w =	42	ft
Poisson Ratio	μ =	0.356	
Required Factor of Safety	FS =	1.25	



Distributed Surcharge Data:

Distributed Load	q =	250	psf
Distance from Shoring	L_1 =	9.0	ft
Width of Load	B_1 =	3.0	ft

Concentrated Load Data:

Concentr. Load 1	P_1 =	0	lb
Concentr. Load 2	P_2 =	0	lb
Distance from Shoring	L_2 =	0.0	ft
Dist. between Loads	B_2 =	0.0	ft

Adjacent Footing Data:

Linear Load on Footing	Q =	0	plf
Distance from Shoring	L_3 =	0	ft
Width of Footing	B_3 =	0.0	ft
Depth of Footing	D =	0.0	ft

Eqiuvalent Fluid Pressure: 32.6 pcf

Total Force Acting on Shoring: 2344 lb/ft

Point of Application: 8 ft Below Top of Shoring

Pressure at Poin 'A': 101.26 psf @ 3 ft Below Top of Shorin

Pressure at Poin 'B': 326 psf @ 10.4 ft Below Top of Shorin

Relative Maximum: 399.44 psf @ 12 ft Below Top of Shorin

LATERAL LOAD DISTRIBUTION FOR SHORING

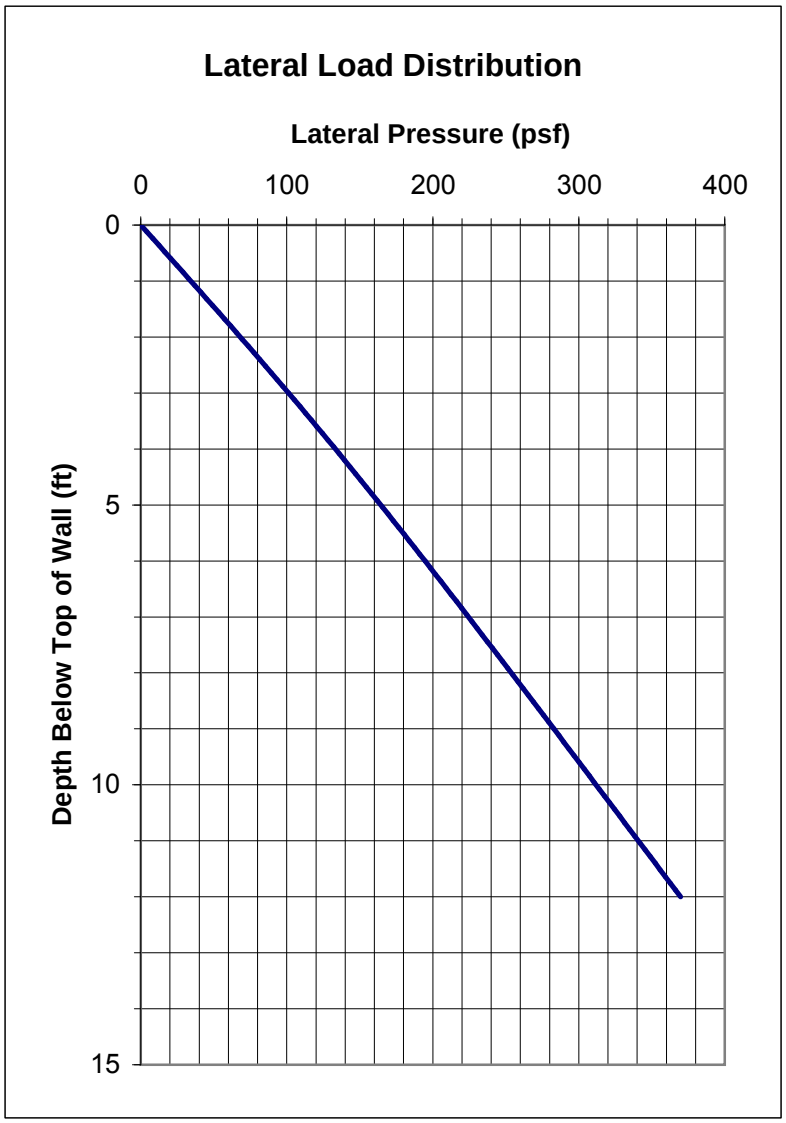
CANTILEVERED 12 FOOT HIGH SHORING

SURCHARGED BY NEIGHBORING PARKING LOT

Initial Input:

Soil and Shoring Data:

Shoring Type - Cantilever		C	
Height of Shoring	H =	12	ft
Total Density	γ_t =	121	pcf
Saturated Density	γ_s =	121	pcf
Cohesion	C =	480	psf
Friction Angle	ϕ =	21	deg
Depth of Water Table	d_w =	42	ft
Poisson Ratio	μ =	0.414	
Required Factor of Safety	FS =	1.25	



Distributed Surcharge Data:

Distributed Load	q =	250	psf
Distance from Shoring	L_1 =	9.0	ft
Width of Load	B_1 =	3.0	ft

Concentrated Load Data:

Concentr. Load 1	P_1 =	0	lb
Concentr. Load 2	P_2 =	0	lb
Distance from Shoring	L_2 =	0.0	ft
Dist. between Loads	B_2 =	0.0	ft

Adjacent Footing Data:

Linear Load on Footing	Q =	0	plf
Distance from Shoring	L_3 =	0	ft
Width of Footing	B_3 =	0.0	ft
Depth of Footing	D =	0.0	ft

Eqiuvalent Fluid Pressure: 32.2 pcf

Total Force Acting on Shoring: 2318 lb/ft

Point of Application: 8 ft Below Top of Shoring

Pressure at Poin 'A': 101.26 psf @ 3 ft Below Top of Shorin

Pressure at Poin 'B': 254.99 psf @ 8 ft Below Top of Shorin

Relative Maximum: 369.7 psf @ 12 ft Below Top of Shoring

APPENDIX L

ALLOWABLE BEARING VALUE

Reference: DEPARTMENT OF THE NAVY,
NAVAL FACILITIES ENGINEERING COMMAND,
DESIGN MANUAL 7.2, page 131

PROPERTIES:

Wet Density (g)	=	126	pcf
Cohesion (**C**)	=	190	psf
Angle of Friction (f)	=	32	degrees
Footing Depth (**D**)	=	2.0	feet
Footing Width (**B**)	=	67	feet
Footing Length (**L**)	=	197	feet
Factor of Safety (**F.S**.)	=	3	

CALCULATIONS - ULTIMATE BEARING CAPACITY

N_c = 38.0 **N_q** = 24.0 **N_g** = 24.2

Square Footing:

Qu = $CN_c(1+0.3B/L)+gDN_q+0.4gBN_g$ =

= 190 x 38 (1 +0.3 x 67 / 197)+ 126 x 2 x 24 +

+0.4x 126 x 67 x 24.2 = 95696

Allowable Bearing Capacity for Square Footing

Qall =Qu / F.S. = 95696 / 3 = 31899

Continuous Footing:

Qu = $CN_c+gDN_q+0.5gBN_g$ =

= 190 x 38 + 126 x 2 x 24 + 0.5 x 126 x 67 x 24.2 =

= 115378

Allowable Bearing Capacity for Continuous Footing

Qall =Qu / F.S. = 115378 / 3 = 38459

ALLOWABLE BEARING VALUE

Reference: DEPARTMENT OF THE NAVY,
NAVAL FACILITIES ENGINEERING COMMAND,
DESIGN MANUAL 7.2, page 131

PROPERTIES:

Wet Density (g)	=	121	pcf
Cohesion (**C**)	=	480	psf
Angle of Friction (f)	=	21	degrees
Footing Depth (**D**)	=	2.0	feet
Footing Width (**B**)	=	67	feet
Footing Length (**L**)	=	197	feet
Factor of Safety (**F.S**.)	=	3	

CALCULATIONS - ULTIMATE BEARING CAPACITY

N_c = 15.1 **N_q** = 7.0 **N_g** = 3.4

Square Footing:

Qu = $CN_c(1+0.3B/L)+gDN_q+0.4gBN_g$ =

= 480 x 15.1 (1 +0.3 x 67 / 197)+ 121 x 2 x 7.01 +

+0.4x 121 x 67 x 3.4 = 20727

Allowable Bearing Capacity for Square Footing

Qall =Qu / F.S. = 20727 / 3 = 6909

Continuous Footing:

Qu = $CN_c+gDN_q+0.5gBN_g$ =

= 480 x 15.1 + 121 x 2 x 7.01 + 0.5 x 121 x 67 x 3.4 =

= 22739

Allowable Bearing Capacity for Continuous Footing

Qall =Qu / F.S. = 22739 / 3 = 7580

APPENDIX M

STATIC EQUIVALENT FLUID PRESSURE
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

Wedge No.	Lateral Load from Active Pressure (Single Wedge) (lbs/lf)	Lateral Load from Active Pressure (Accumulated) (lbs/lf)	Equivalent Fluid Pressure psf/ft or pcf
1	3,664	3,664	50.9

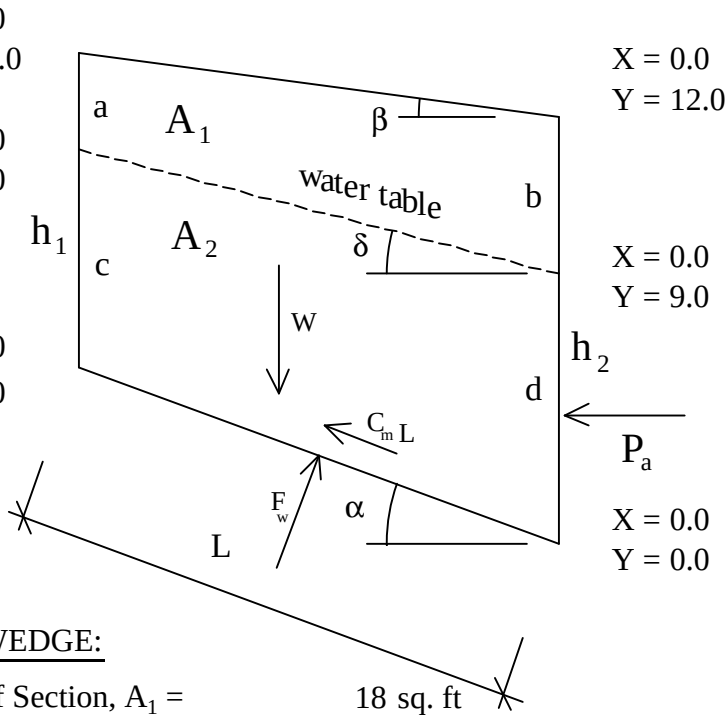
EFP calculated for H= 12 ft

Total Density, γ_t =	126	pcf	
Saturated Density, γ_s =	126	pcf	
Water Density, γ_w =	62.4	pcf	
Friction Angle, ϕ =	32	degrees	
Cohesion, C =	190	psf	(Along-Bedding Failure)
Surface Angle, β =	0	degrees	
Fail. Plane Angle, α =	56.3	degrees	(Search for Critical Failure Plane)

LATERAL LOAD APPLIED ON BLOCK 1
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

DATA:

Total Density, γ_t =	126	pcf		
Saturated Density, γ_s =	126	pcf		
Water Density, γ_w =	62.4	pcf		
Friction Angle, ϕ =	32.0	degrees	Mobilized, ϕ_m =	22.6 degrees
Cohesion, C =	190	psf	Mobilized, C_m =	127 psf
Fail. Plane Angle, α =	56.3	degrees		
Surface Angle, β =	0.0	degrees		
Water Table Angle, δ =	0.0	degrees		
Wedge Length, L =	10.8	ft		
Factor of Safety, FS =	1.5			

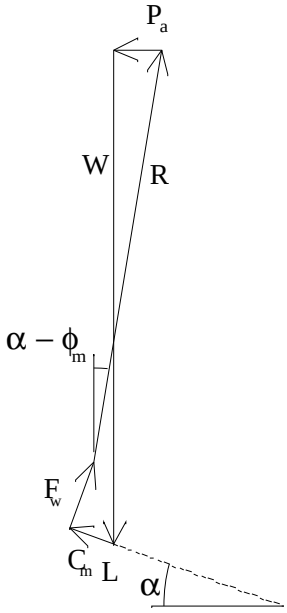


a =	3.0	ft	
b =	3.0	ft	
c =	0.0	ft	
d =	9.0	ft	
h_1=	3.0	ft	
h_2=	12.0	ft	

THE WEDGE:

Area of Section, A_1 =	18	sq. ft
Area of Section, A_2 =	27	sq. ft
Total Area, A =	45	sq. ft
Weight of Soil, W =	5,667	lbs/lf
Cohesion, C_mL =	1,368	lbs/lf
Uplift Force, F_w =	3,037	lbs/lf

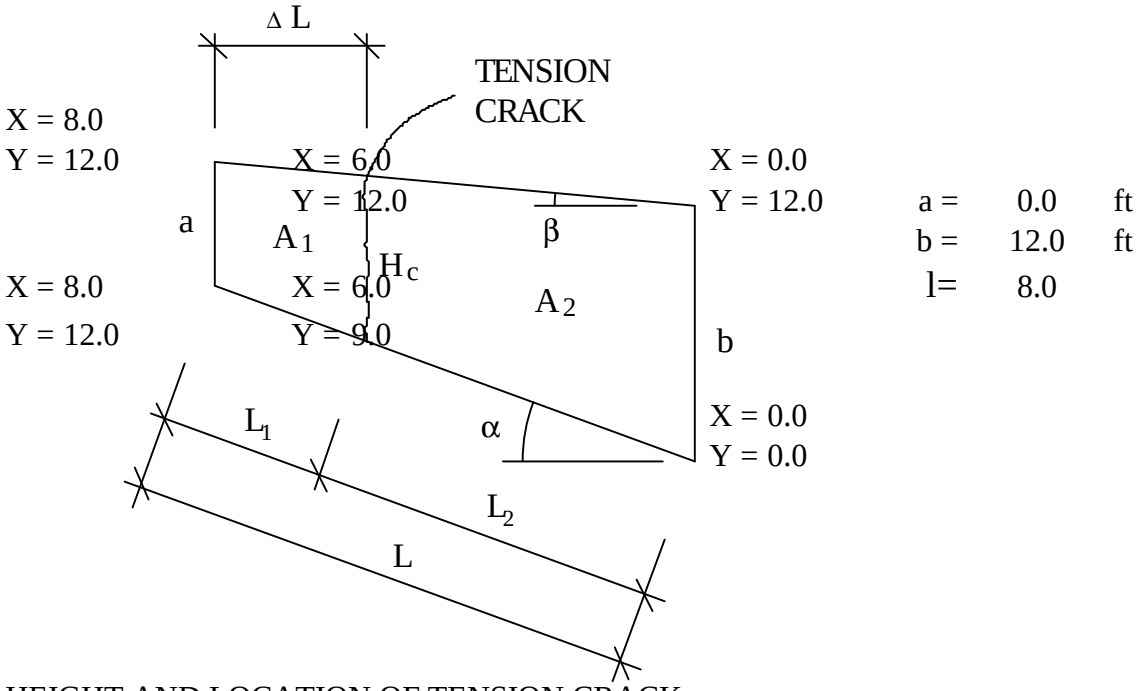
Lateral Load, P_a = 3,664 lbs/lf



TENSION CRACK LOCATION
CANTILEVERED RETAINING WALLS

DATA:

Soil Density, γ_t =	126	pcf
Friction Angle, ϕ =	32	degrees
Cohesion, C =	190	psf
Surface Angle, β =	0.0	degrees
Fail. Plane Angle, α =	56.3	degrees
Wedge Length, L =	14	ft
Factor of Safety, F.S.=	1.5	



a = 0.0 ft
b = 12.0 ft
l = 8.0

HEIGHT AND LOCATION OF TENSION CRACK:

Height of Crack, H_c =	3.0	ft
Location of Crack, ΔL =	2.0	ft

SECTION OF WEDGE ABOVE THE CRACK:

Length of Section, L_1 =	4	ft	Driving Force, W_{D1} =	318	lbs
Area of Section, A_1 =	3	sq. ft	Friction, F_{fr1} =	132	lbs
Weight of Section, W_1 =	382	lbs	Cohesion, CL_1 =	689	lbs
Horizontal Projection of Resulting Force, P_1 =	-279	lbs			

SECTION OF WEDGE BELOW THE CRACK:

Length of Section, L_2 =	11	ft	Driving Force, W_{D2} =	4,715	lbs
Area of Section, A_2 =	45	sq. ft	Friction, F_{fr2} =	1,964	lbs
Weight of Section, W_2 =	5,667	lbs	Cohesion, CL_2 =	2,052	lbs
Horizontal Projection of Resulting Force, P_2 =	388	lbs			

PSEUDO-STATIC EQUIVALENT FLUID PRESSURE
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

Wedge No.	Lateral Load from Active Pressure (Single Wedge) (lbs/lf)	Lateral Load from Active Pressure (Accumulated) (lbs/lf)	Equivalent Fluid Pressure psf/ft or pcf
1	4,655	4,655	64.7

EFP calculated for H= 12 ft

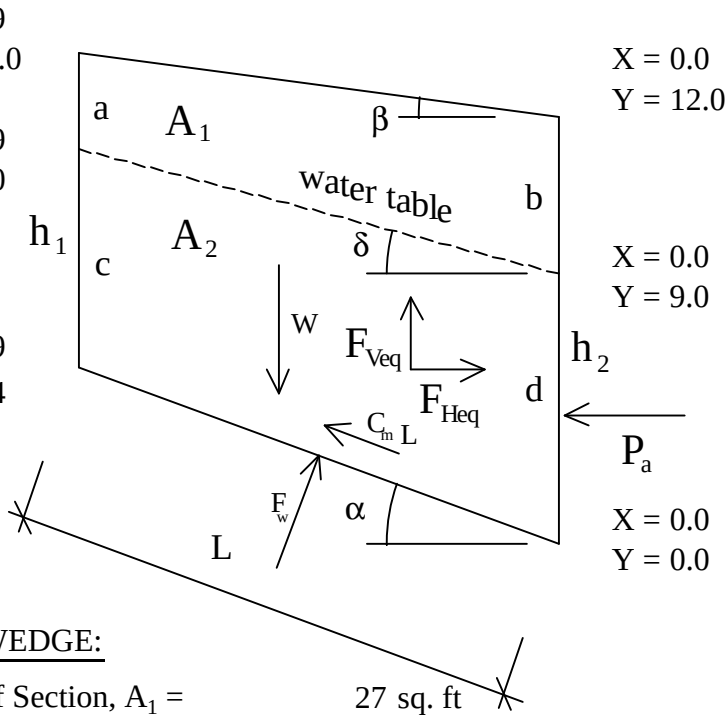
Total Density, γ_t =	126	pcf	
Saturated Density, γ_s =	126	pcf	
Water Density, γ_w =	62.4	pcf	
Friction Angle, ϕ =	32	degrees	
Cohesion, C =	190	psf	(Along-Bedding Failure)
Surface Angle, β =	0	degrees	
Fail. Plane Angle, α =	43.5	degrees	(Search for Critical Failure Plane)
Required F.S. =	1		
Seismic Forces	Yes		
Coef. of Horiz. Accel. =	0.335		(PGA_M = 0.67)
Coef. of Vert. Accel. =	0		

NOTE: - The Pseudo-Static Analysis Combines The Earth Pressures
From Static And Seismic Forces

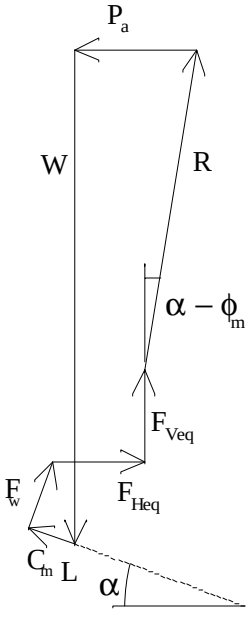
LATERAL LOAD APPLIED ON BLOCK 1
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

DATA:

Total Density, γ_t =	126	pcf	Coef. of Horiz. Accel. =	0.335
Saturated Density, γ_s =	126	pcf	Coef. of Vert. Accel. =	0
Water Density, γ_w =	62.4	pcf		
Friction Angle, ϕ =	32.0	degrees	Mobilized, ϕ_m =	32.0 degrees
Cohesion, C =	190	psf	Mobilized, C_m =	190 psf
Fail. Plane Angle, α =	43.5	degrees		
Surface Angle, β =	0.0	degrees		
Water Table Angle, δ =	0.0	degrees		
Wedge Length, L =	12.2	ft		
Factor of Safety, FS =	1.0			



a =	3.0	ft	
b =	3.0	ft	
c =	0.6	ft	
d =	9.0	ft	
h_1=	3.6	ft	
h_2=	12.0	ft	



THE WEDGE:

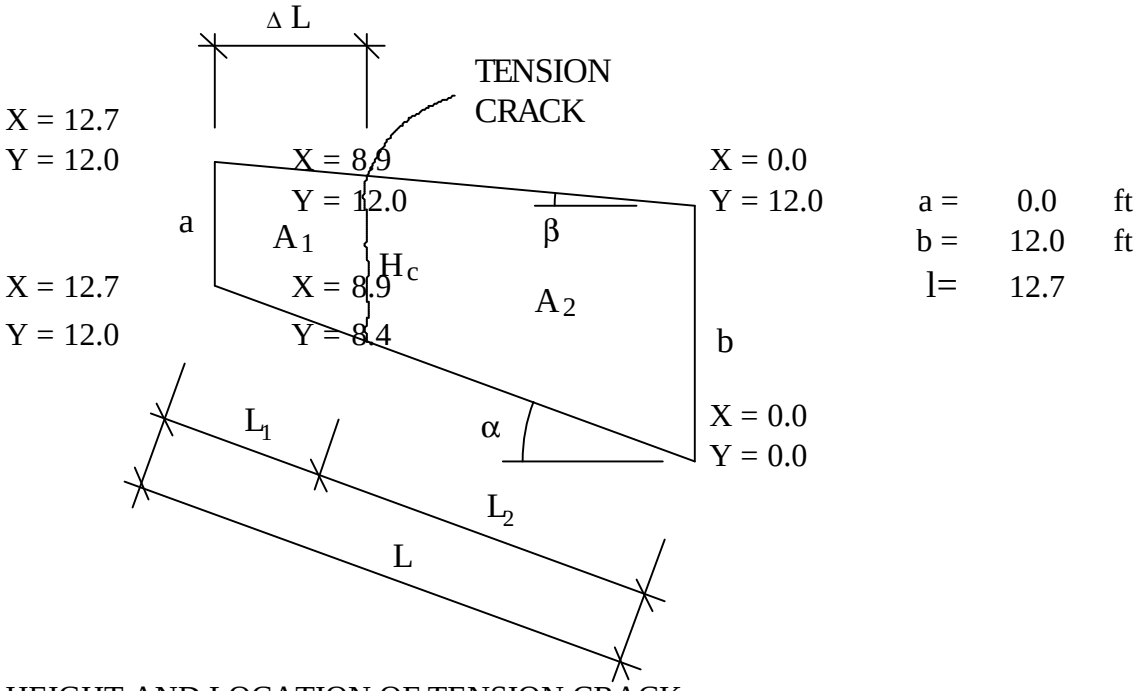
Area of Section, A_1 =	27	sq. ft
Area of Section, A_2 =	43	sq. ft
Total Area, A =	69	sq. ft
Weight of Soil, W =	8,717	lbs/lf
Cohesion, C_mL =	2,322	lbs/lf
Uplift Force, F_w =	3,659	lbs/lf
Horiz. Seism. Force, F_{Heq}=	2,920	lbs/lf
Vert. Seism. Force, F_{Veq}=	0	lbs/lf

Lateral Load, P_a = 4,655 lbs/lf

TENSION CRACK LOCATION
CANTILEVERED RETAINING WALLS

DATA:

Soil Density, γ_t =	126	pcf
Friction Angle, ϕ =	32	degrees
Cohesion, C =	190	psf
Surface Angle, β =	0.0	degrees
Fail. Plane Angle, α =	43.5	degrees
Wedge Length, L =	17	ft
Factor of Safety, F.S.=	1.5	



a = 0.0 ft
b = 12.0 ft
l = 12.7

HEIGHT AND LOCATION OF TENSION CRACK:

Height of Crack, H_c =	3.6	ft
Location of Crack, ΔL =	3.8	ft

SECTION OF WEDGE ABOVE THE CRACK:

Length of Section, L_1 =	5	ft	Driving Force, W_{D1} =	591	lbs
Area of Section, A_1 =	7	sq. ft	Friction, F_{fr1} =	390	lbs
Weight of Section, W_1 =	859	lbs	Cohesion, CL_1 =	993	lbs
Horizontal Projection of Resulting Force, P_1 =	-575	lbs			

SECTION OF WEDGE BELOW THE CRACK:

Length of Section, L_2 =	12	ft	Driving Force, W_{D2} =	5,995	lbs
Area of Section, A_2 =	69	sq. ft	Friction, F_{fr2} =	3,955	lbs
Weight of Section, W_2 =	8,717	lbs	Cohesion, CL_2 =	2,322	lbs
Horizontal Projection of Resulting Force, P_2 =	-204	lbs			

STATIC EQUIVALENT FLUID PRESSURE
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

Wedge No.	Lateral Load from Active Pressure (Single Wedge) (lbs/lf)	Lateral Load from Active Pressure (Accumulated) (lbs/lf)	Equivalent Fluid Pressure psf/ft or pcf
1	1,805	1,805	25.1

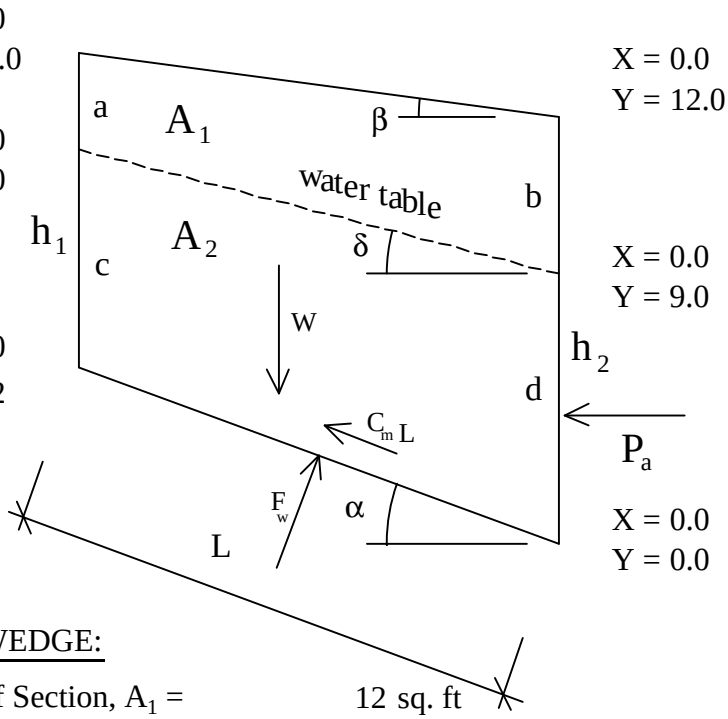
EFP calculated for H= 12 ft

Total Density, γ_t =	121	pcf	
Saturated Density, γ_s =	121	pcf	
Water Density, γ_w =	62.4	pcf	
Friction Angle, ϕ =	21	degrees	
Cohesion, C =	480	psf	(Along-Bedding Failure)
Surface Angle, β =	0	degrees	
Fail. Plane Angle, α =	52.2	degrees	(Search for Critical Failure Plane)

LATERAL LOAD APPLIED ON BLOCK 1
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

DATA:

Total Density, γ_t =	121	pcf		
Saturated Density, γ_s =	121	pcf		
Water Density, γ_w =	62.4	pcf		
Friction Angle, ϕ =	21.0	degrees	Mobilized, ϕ_m =	14.4 degrees
Cohesion, C =	480	psf	Mobilized, C_m =	320 psf
Fail. Plane Angle, α =	52.2	degrees		
Surface Angle, β =	0.0	degrees		
Water Table Angle, δ =	0.0	degrees		
Wedge Length, L =	6.6	ft		
Factor of Safety, FS =	1.5			

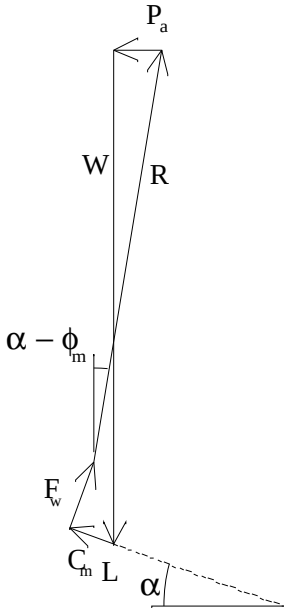


a =	3.0	ft	
b =	3.0	ft	
c =	3.8	ft	
d =	9.0	ft	
h_1 =	6.8	ft	
h_2 =	12.0	ft	

THE WEDGE:

Area of Section, A_1 =	12	sq. ft
Area of Section, A_2 =	26	sq. ft
Total Area, A =	38	sq. ft
Weight of Soil, W =	4,583	lbs/lf
Cohesion, C_mL =	2,101	lbs/lf
Uplift Force, F_w =	2,625	lbs/lf

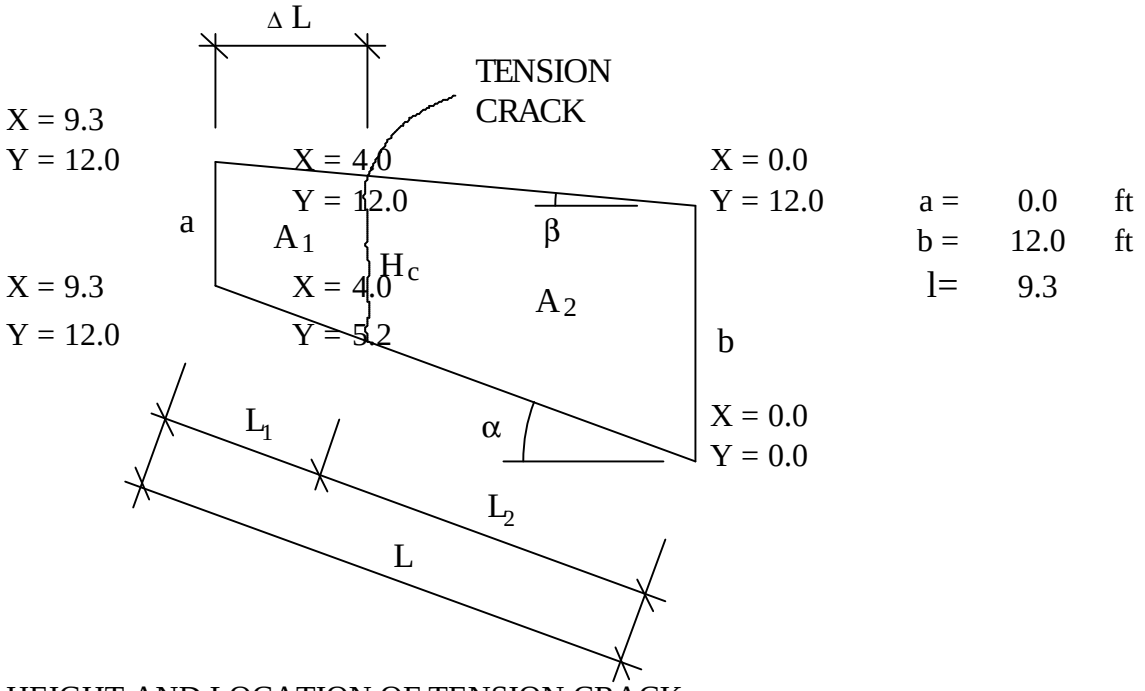
Lateral Load, P_a = 1,805 lbs/lf



TENSION CRACK LOCATION
CANTILEVERED RETAINING WALLS

DATA:

Soil Density, γ_t =	121	pcf
Friction Angle, ϕ =	21	degrees
Cohesion, C =	480	psf
Surface Angle, β =	0.0	degrees
Fail. Plane Angle, α =	52.2	degrees
Wedge Length, L =	15	ft
Factor of Safety, F.S.=	1.5	



a =	0.0	ft
b =	12.0	ft
l=	9.3	

HEIGHT AND LOCATION OF TENSION CRACK:

Height of Crack, H_c =	6.8	ft
Location of Crack, ΔL =	5.3	ft

SECTION OF WEDGE ABOVE THE CRACK:

Length of Section, L_1 =	9	ft	Driving Force, W_{D1} =	1,722	lbs
Area of Section, A_1 =	18	sq. ft	Friction, F_{fr1} =	513	lbs
Weight of Section, W_1 =	2,180	lbs	Cohesion, CL_1 =	4,140	lbs
Horizontal Projection of Resulting Force, P_1 =	-1,797	lbs			

SECTION OF WEDGE BELOW THE CRACK:

Length of Section, L_2 =	7	ft	Driving Force, W_{D2} =	3,620	lbs
Area of Section, A_2 =	38	sq. ft	Friction, F_{fr2} =	1,079	lbs
Weight of Section, W_2 =	4,583	lbs	Cohesion, CL_2 =	3,152	lbs
Horizontal Projection of Resulting Force, P_2 =	-374	lbs			

PSEUDO-STATIC EQUIVALENT FLUID PRESSURE
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

Wedge No.	Lateral Load from Active Pressure (Single Wedge) (lbs/lf)	Lateral Load from Active Pressure (Accumulated) (lbs/lf)	Equivalent Fluid Pressure psf/ft or pcf
1	2,130	2,130	29.6

EFP calculated for H= 12 ft

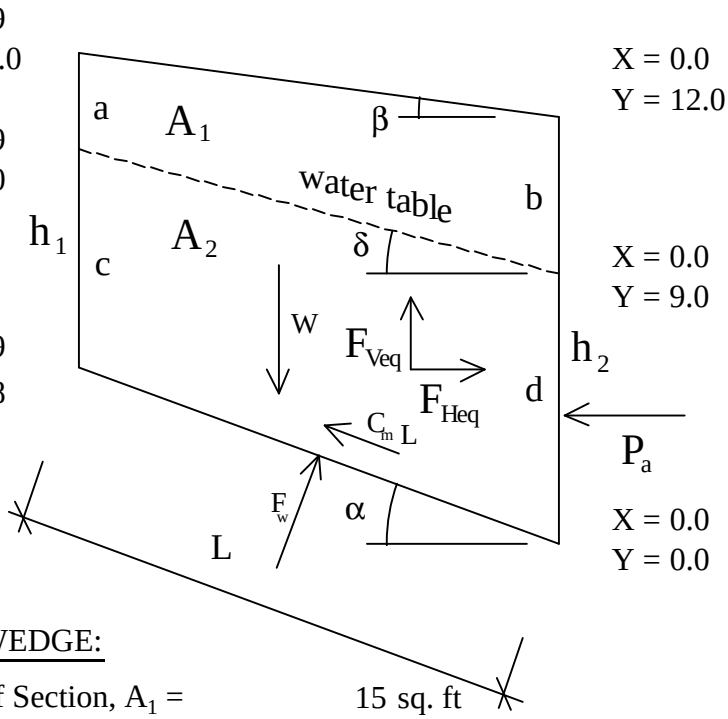
Total Density, γ_t =	121	pcf	
Saturated Density, γ_s =	121	pcf	
Water Density, γ_w =	62.4	pcf	
Friction Angle, ϕ =	21	degrees	
Cohesion, C =	480	psf	(Along-Bedding Failure)
Surface Angle, β =	0	degrees	
Fail. Plane Angle, α =	44.4	degrees	(Search for Critical Failure Plane)
Required F.S. =	1		
Seismic Forces	Yes		
Coef. of Horiz. Accel. =	0.335		(PGA_M = 0.67)
Coef. of Vert. Accel. =	0		

NOTE: - The Pseudo-Static Analysis Combines The Earth Pressures
From Static And Seismic Forces

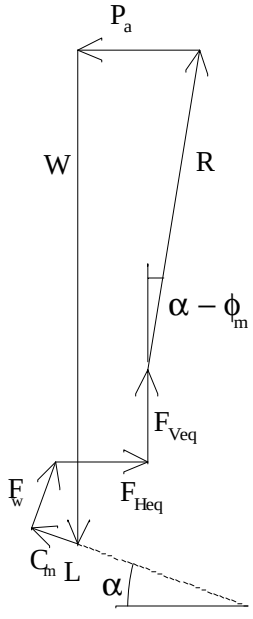
LATERAL LOAD APPLIED ON BLOCK 1
CANTILEVERED RETAINING WALLS
FOR 12 FEET HIGH RETAINING WALL

DATA:

Total Density, γ_t =	121	pcf	Coef. of Horiz. Accel. =	0.335
Saturated Density, γ_s =	121	pcf	Coef. of Vert. Accel. =	0
Water Density, γ_w =	62.4	pcf		
Friction Angle, ϕ =	21.0	degrees	Mobilized, ϕ_m =	21.0 degrees
Cohesion, C =	480	psf	Mobilized, C_m =	480 psf
Fail. Plane Angle, α =	44.4	degrees		
Surface Angle, β =	0.0	degrees		
Water Table Angle, δ =	0.0	degrees		
Wedge Length, L =	6.9	ft		
Factor of Safety, FS =	1.0			



a =	3.0	ft	
b =	3.0	ft	
c =	4.2	ft	
d =	9.0	ft	
h_1=	7.2	ft	
h_2=	12.0	ft	



THE WEDGE:

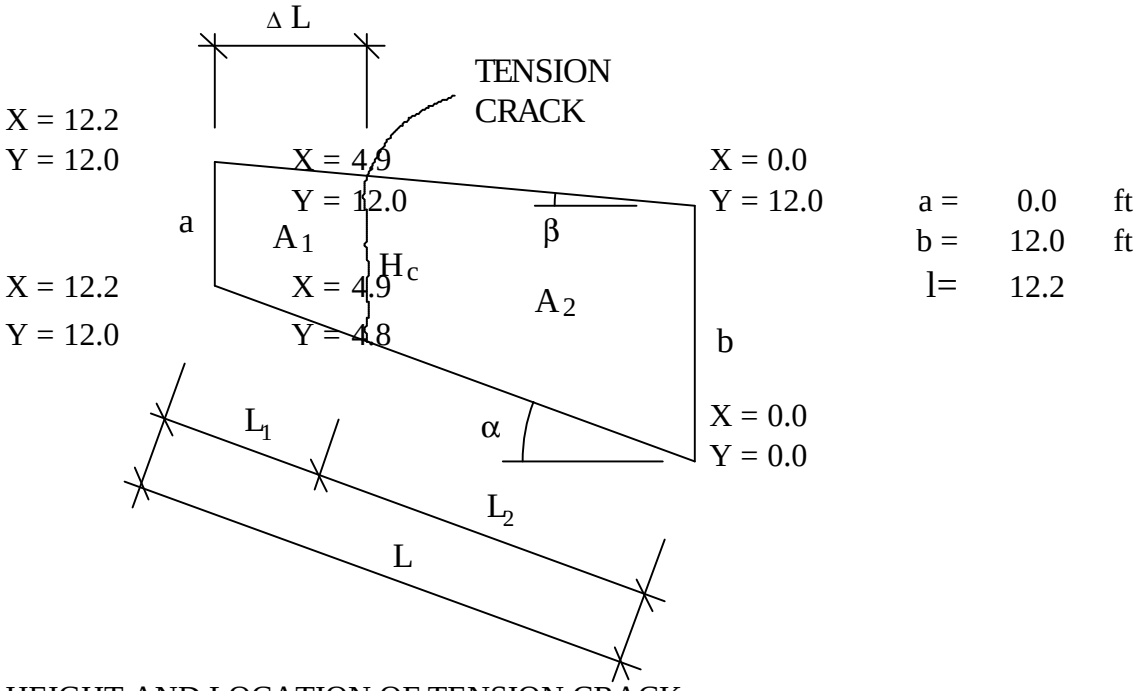
Area of Section, A_1 =	15	sq. ft
Area of Section, A_2 =	32	sq. ft
Total Area, A =	47	sq. ft
Weight of Soil, W =	5,722	lbs/lf
Cohesion, C_mL =	3,319	lbs/lf
Uplift Force, F_w =	2,839	lbs/lf
Horiz. Seism. Force, F_{Heq}=	1,917	lbs/lf
Vert. Seism. Force, F_{Veq}=	0	lbs/lf

Lateral Load, P_a = 2,130 lbs/lf

TENSION CRACK LOCATION
CANTILEVERED RETAINING WALLS

DATA:

Soil Density, γ_t =	121	pcf
Friction Angle, ϕ =	21	degrees
Cohesion, C =	480	psf
Surface Angle, β =	0.0	degrees
Fail. Plane Angle, α =	44.4	degrees
Wedge Length, L =	17	ft
Factor of Safety, F.S.=	1.5	



a = 0.0 ft
b = 12.0 ft
l = 12.2

HEIGHT AND LOCATION OF TENSION CRACK:

Height of Crack, H_c =	7.2	ft
Location of Crack, ΔL =	7.3	ft

SECTION OF WEDGE ABOVE THE CRACK:

Length of Section, L_1 =	10	ft	Driving Force, W_{D1} =	2,213	lbs
Area of Section, A_1 =	26	sq. ft	Friction, F_{fr1} =	866	lbs
Weight of Section, W_1 =	3,160	lbs	Cohesion, CL_1 =	4,906	lbs
Horizontal Projection of Resulting Force, P_1 =	-2,541	lbs			

SECTION OF WEDGE BELOW THE CRACK:

Length of Section, L_2 =	7	ft	Driving Force, W_{D2} =	4,007	lbs
Area of Section, A_2 =	47	sq. ft	Friction, F_{fr2} =	1,568	lbs
Weight of Section, W_2 =	5,722	lbs	Cohesion, CL_2 =	3,319	lbs
Horizontal Projection of Resulting Force, P_2 =	-629	lbs			

Appendix N

Final Resolution of Approval

TBD

Appendix O
Operation & Maintenance

Operation & Maintenance (O&M) Plan for WQMP

Project Name:

CRAIG APARTMENT

7682,7692,7712,7722 CRAIG AVE.

BUENA PARK, CA 90621

Prepared for:

CRAIG & BEACH INVESTMENT, INC.

5681 BEACH BLVD.

BUENA PARK, CA 90621

Contact: Yolan Lee

Email: ylee@yleelaw.com

Phone: (714) 523-2700

Prepared on:

8/18/23

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Section 1 Project Description and BMP Overview

General Project Attributes and Stormwater Control Measures		
Site Location	*7682,7692,7712,7722 CRAIG AVE. BUENA PARK, CA 90621*	
Project Area (ft^2): 30,114	Number of Dwelling Units: 12	SIC Code: 7011
Narrative Project Description:	The project is located on Craig Ave west of Beach Ave, City of Buena Park, California. The project is an apartment development. The project area is 0.69 acres. The proposed areas are 6,049 sf of concrete walkway, 2,606 of landscape, 10,275 sf of pavement driveway and parking area, 8,453 sf of roof area, and 2,731 sf of bio-retention area with underdrain. Trash room is roof covered and located on the ground floor between parking and north building. The city's trash service company, EDCO, will provide scout service to bring containers to collection vehicles. There will not be any on-site vehicle maintenance. Hydromodification is not required. Runoff sheet flow in the parking lot into proposed catch basin with filter insert and pipe to bio-retention with underdrain. After the BMP treatment, runoff will be conveyed to a sump pump and will be pumped to the Craig Ave at 347GPM (0.774 cfs) per calculation. Pre Q 2-24 = 0.92 cfs. BMP Volume of water = 1,793 cf needs to be treated calculated from BMP's sizing calculation per the County of Orange requirement.	
Project-specific Source Control BMPs	*N1, N2, N3, N4, N5, N10, N11, N12, N14, N15.*	

General Project Attributes and Stormwater Control Measures	
Summary of Drainage Patterns	Proposed development will be an apartment. Access to the development located on the northeast corner of the property from Craig Ave. The site is flat. Runoff flows from east to west. There will be 2 proposed buildings separated by a pavement drive. There are concrete walkway and planters along northerly and southerly of the property. There are total 7 bio-retentions with underdrain. North building roof runoff will be treated in 3 bio-retentions with underdrain located north of the north building. Treated runoff will be piped to Craig Ave. South building roof runoff will be treated in 3 bio-retentions with underdrain located south of the south building. Treated runoff will be piped to a sump pump located in the north west parking area. Runoff in the parking lot and concrete walk will sheet flow into bio-retention with underdrain located on the west side of the property. After the BMP treatment, runoff will be conveyed to a sump pump and will be pumped to the Craig Ave at 347GPM (0.774 cfs).
Summary of Hydrologic Source Controls	*N/A*

General Project Attributes and Stormwater Control Measures	
Structural Treatment and Hydromodification BMPs	*N/A*

The project proposed planter box filtration BMP

BMP ID	BMP Type	Narrative Description	Location	Other Considerations
BMP A1, A2, A3	*Planter Box-Bioinfiltration Basin (BIO-1)*	*Above-ground 3-inch ponding, 3.5 feet soil and gravel layer with under drain.*	*Northeast of the site.*	*Underdrain outlet is above gravel layer to provide retention/nutrient treatment.*
BMP B1	*Planter Box-Bioinfiltration Basin (BIO-1)*	*Above-ground 4-inch ponding, 3.5 feet soil and gravel layer with under drain.*	*Southwest of the site.*	*Underdrain outlet is above gravel layer to provide retention/nutrient treatment.*
BMP B2, B3	*Planter Box-Bioinfiltration Basin (BIO-1)*	*Above-ground 3-inch ponding, 3.5 feet soil and gravel layer with under drain.*	*North of the site.*	*Underdrain outlet is above gravel layer to provide retention/nutrient treatment.*
BMP C1	*Planter Box-Bioinfiltration Basin (BIO-1)*	*Above-ground 3-inch ponding, 3.5 feet soil and gravel layer with under drain.*	*North of the site.*	*Underdrain outlet is above gravel layer to provide retention/nutrient treatment.*

Section 2 Personnel, Documentation, and Reporting

2.1 Maintenance Roles and Responsibilities

The roles related to O&M of the BMPs are defined as follows:

- ***Facility Owner*** *– The Facility Owner is the party who is ultimately responsible for the functionality of all BMPs. The maintenance agreement (Attachment 2) identifies the facility owner for each BMP, including the timing of any ownership transitions.*
- ***Responsible Party*** *– The Responsible Party is the party that shall have direct responsibility for the O&M of the BMPs. This party shall be the designated contact with inspectors and lead maintenance personnel. The Responsible Party shall sign self-inspection reports and any correspondence regarding the verification of inspections and required maintenance. The Responsible Party will establish a system to delegate general inquiries to the appropriate maintenance personnel concerning the operation and maintenance of the BMPs. The Responsible Party reports directly to the Facility Owner and operates and manages the BMPs on the Facility Owner's behalf.*
- ***Designated Emergency Respondent*** *– The Designated Emergency Respondent is the party responsible for directing activities and communications during emergencies such as broken irrigation pipes, landslides, hazardous spill responses etc., that would require immediate response should they occur during off-hours. It is the responsibility of the Designated Emergency Respondent to communicate the emergent situation with the Responsible Party as soon as possible.*
- ***Key Maintenance Personnel*** *– Key Maintenance Personnel are the designated lead field manager(s) or supervisor(s) who directly oversee and delegate the maintenance activities, maintain the scheduling, and coordinate activities between all personnel. These tend to change more often than other personnel over time, so their names do not necessarily need to be included in the O&M Plan. However, they must be properly trained as recorded in the training logs (Section 2.2).*

The table below lists the roles for this project. This table must be updated whenever changes occur.

Role	Name (Title and Affiliation)	Phone Number	Address	Email Address
Facility Owner	CRAIG AND BEACH INVESTMENT, INC.	(714) 523-2700	5681 Beach, Buena Park, CA 90621	ylee@yleelaw.com
Responsible Party	CRAIG AND BEACH INVESTMENT, INC.	(714) 523-2700	5681 Beach, Buena Park, CA 90621	ylee@yleelaw.com

Designated Emergency Respondent	Yohan Lee	(714) 523-2700	5681 Beach, Buena Park, CA 90621	ylee@yleelaw.com

2.2 Qualification and Training Requirements for Personnel

Many of the activities presented in this O&M plan can be completed by personnel with basic landscaping and yard maintenance skills and project-specific orientation. However, there are activities that require a more experienced skillset to identify and remediate potential issues that could compromise the functionality of each BMP. The Responsible Party shall exercise discretion in determining the skillset required to complete each task.

Activities that can typically be completed by maintenance personnel with basic training and/or qualifications include:

- General landscaping activities (pruning, weeding, and raking)
- Routine sediment, trash and debris removal;
- Filling in minor scour or erosion areas, or replacing rip rap that has become displaced; and
- Watering or irrigation, as necessary.

Activities that typically require maintenance personnel with specialized qualifications, training, and/or engineering oversight include:

- Inspection and/or repair of inflow and outflow structures;
- Inspection and/or repair of underground elements;
- Large-volume sediment or media removal requiring specialized equipment;
- Inspection, diagnosis, and remediation of significant erosion issues potentially compromising function and/or structural stability; and
- Spill response and remediation.

Maintenance personnel who have identified a potential major issue with any facility should contact the designated key maintenance personnel for the facility immediately.

Training must be provided for all personnel performing maintenance tasks on or providing maintenance oversight of structural BMPs. The table below provides the personnel and relevant training topics.

Training Logs contained in Attachment 3 should be used to document training of maintenance personnel.

Training Topic	Responsible Party	Designated Emergency Respondent	Key Maintenance Personnel
Proper Maintenance of all BMP components	X		X
Identification and clean-up procedures for spills and overflows	X	X	X
Safety concerns when maintaining devices and responding to emergency situations	X	X	X

2.3 Maintenance Agreements and Funding Mechanisms

Craig & Beach Investment, Inc. will be responsible for the maintenance of all BMPs.
Company Name: Craig & Beach Investment, Inc.
Address: 5681 Beach Blvd. Buena Park, CA 90621
Owner Name: Yohan Lee
Email: ylee@yleelaw.com
Phone: (714) 523-2700

2.4 Record Keeping Requirements

Documentation of site conditions, maintenance activities performed, and any other remaining maintenance required is necessary during each inspection/maintenance visit. Inspection and maintenance records shall be retained in an accessible, secure location for the life of the facility, and not less than 10 years.

The following documentation mechanisms and procedures have been established for this O&M Plan:

- **Training Logs:** Personnel must document training activities as part of implementing this O&M Plan. Attachment 3 contains a sample training log.
- **Inspection and Routine Maintenance Logs:** Maintenance personnel are required to maintain logs of inspection and maintenance activities. Attachment 4 contain inspection and maintenance logs.
- **Rehabilitative and Corrective Maintenance Log and Reporting:** Rehabilitation and corrective maintenance activities should be documented at a degree of detail that is commensurate to the complexity/significance of the activity. Any significant changes to the BMP designs that arise from rehabilitation/corrective maintenance will be documented via

an update to the Project WQMP and as-built drawings. Corrective maintenance that does not result in design changes will be documented as a special entry in the maintenance logs to provide pertinent details of that rehabilitative or corrective maintenance activity.

2.5 Required Permits Associated with Maintenance Activities

N/A

2.6 Self-Reporting Requirements

The WQMP Verification Form [Attachment A] shall be completed accurately and submitted with associated documentation to the City of Buena Park by September 30 of each year, or as requested by the City. Failure to complete and submit the verification form will result in a noncompliance and enforcement actions may be taken.

2.7 City Inspections

The City of Buena Park may conduct a site inspection to evaluate compliance with the Project WQMP, at any time, in accordance with the City Buena Municipal Code.

2.8 Electronic Data Submittal

This document, along with the attachments, shall be provided to the City or County in PDF format. Autocad files and/or GIS coordinates of BMPs shall also be submitted to the City/County.

Section 3 Inspection and Maintenance Activities

This section identifies the inspection and O&M activities for each BMP incorporated into the project. Section 3.1 and 3.2 contain common maintenance activities and frequencies associated with Source Control BMPs and HSCs, respectively. Section 3.3 contains individual tables for each structural LID or hydromodification BMP with an explanation of the various types of maintenance activities associated with these BMPs.

3.1 Inspection and Maintenance of Source Control BMPs

Source Control BMP	Activity	Frequency
Dry Weather Flow Source Control **Note: this is a South Orange County High Priority Water Quality Condition for All Projects**	Check for dry weather flows such as street washing, irrigation overspray, air conditioner condensate in areas of the project that do not drain to LID BMPs, the sanitary sewer, or landscaped pervious areas. Notify residents of any dry weather flows and follow up to correct.	Twice per year during dry season
	Inspect project outfall or most-downstream project manhole for presence of dry weather flow. If present, conduct reconnaissance to determine source and implement actions to eliminate source.	Twice per year during dry season
N1. Education for Property Owner's Tenants and Occupants	Distribute appropriate materials to owners, tenants, and/or occupants via contract language, mailings, website, or meetings.	Information provided to owners and tenants upon sale or lease. Reminders sent or posted as needed.
	Check www.ocwatersheds.com and/or City website for updated educational materials.	Annually
N2. Activity Restrictions	Within the CC&R's or lease agreement, restrict the following activities: *Landscapeing*	Information provided to owners and tenants upon sale or lease. Reminders sent or posted as needed.

Source Control BMP	Activity	Frequency
N3/S4. Common Area Landscape Management, Efficient Landscape Design, and Efficient Irrigation	Check that fertilizer and pesticide usage is in accordance wiN1th the Integrated Pest Management Program. Adjust, if needed.	Annually
	Check the irrigation system water budget to ensure efficiency targets are being met and the system is in good condition. Adjust/repair irrigation system and controllers, if needed.	Annually prior to irrigation system activation
	Check landscaping for presence of invasive species and remove, if needed.	Annually
N11. Common Area Litter Control	Remove trash from around trash enclosure, inspect to ensure lids closed, structurally sound, and not overflowing. Repair or replace, as needed.	Monthly
	Inspect common area for litter and trash disposal violations by homeowners and reporting to the HOA or responsible party for investigation. Remove litter, as needed.	Weekly
N13/S6. Housekeeping of Loading Docks	Inspect loading dock for litter, spills, broken containers, and broken containers. Remove litter and debris and sweep docking area.	Monthly
	Check that loading dock is covered and isolated with no run-on or run-off to other areas or the storm drain system. Repair, redesign, regrade, etc. to correct deficiencies.	Annually
	If spills of hazardous materials occur, clean up spill, but prevent wash water from entering storm drain system.	As needed

Source Control BMP	Activity	Frequency
N14. Common Area Catch Basin Inspection	Remove trash and debris from catch basins and grates. Check for damage, clogging, and standing water. Repair or mitigate clogging/standing water, as needed.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
N15. Street Sweeping Private Streets and Parking Lots	Sweep curb and gutter areas using a vacuum street sweeper. Report any significant or illicit debris in curb/gutter to HOA or responsible party, as needed.	Weekly to Monthly
S1. Provide Storm Drain System Stenciling and Signage	Check that all catch basins in paved areas marked or stenciled with "No dumping-Drains to Ocean; No Descargue Basura" language. Replace/repaint markings if faded, damaged, removed, or otherwise illegible.	Annually
S2. Design and Construct Outdoor Material Storage Areas	Check outdoor material storage structure to ensure structural stability is sound and that no contact of the stored materials with rainfall or runoff is occurring. Check secondary containment for leaks. Repair leaks or damage, as needed and mitigate, if coming into contact with stormwater.	Twice per year
S3. Design and Construct Trash and Waste Storage Areas	Check that outdoor waste storage structure is consistently covered, that structural stability is sound, and that no run-on or contact of the trash with runoff is occurring. Repair leaks or damage and mitigate if trash coming into contact with stormwater, as needed.	Twice per year
	Check that trash is removed by local waste management contractor on at least a weekly basis for proper disposal.	Weekly

Source Control BMP	Activity	Frequency
S5. Protect Slopes and Channels and Provide Energy Dissipation	Check slopes, channels, riprap and other conveyance or energy dissipation areas for signs of erosion or scour. Replace material, repair channels, replant vegetation, and/or redesign, as needed for signs of erosion/scour.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
S7. Maintenance Bays	Check that no run-on or runoff is occurring to or from maintenance bays	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Check that all wash water, leaks, and spills are prevented from possible contact with rainwater. Check berms, drop inlets, and other control devices for structural soundness and effectiveness. Repair or mitigate, as needed, if runoff occurring from maintenance bays.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Remove trash and debris and sweep maintenance areas	Monthly
S8. Vehicle Wash Areas	Check that no run-on or runoff is occurring to or from vehicle wash areas	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Check that all wash water, leaks, and spills are prevented from possible contact with rainwater. Check berms, drop inlets, and other control devices for structural soundness and effectiveness. Maintain or replace any failed structural measures, as needed.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches

Source Control BMP	Activity	Frequency
	Remove trash and debris from vehicle wash areas	Monthly
S9. Outdoor Processing Areas	Check that all wash water, leaks, and spills are prevented from possible contact with rainwater. Check berms, drop inlets, and other control devices for structural soundness and effectiveness. Maintain or replace any failed structural measures, as needed.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Remove trash and debris and sweep outdoor processing areas	Monthly
S10. Equipment Wash Areas	Check that all wash water, leaks, and spills are prevented from possible contact with rainwater. Check berms, drop inlets, and other control devices for structural soundness and effectiveness. Maintain or replace any failed structural measures, as needed.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Remove trash and debris and sweep equipment wash areas	Monthly
S11. Fueling Areas	Check that all wash water, leaks, and spills are prevented from possible contact with rainwater. Check berms, drop inlets, and other control devices for structural soundness and effectiveness. Maintain or replace any failed structural measures, as needed.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Remove trash and debris and sweep fueling areas	Monthly
S12. Hillside Landscaping	Check the vegetation on steep hillsides to ensure healthy, and check for signs of erosion. Replace eroded areas with deep-rooted, drought tolerant vegetation and remove invasives, as needed.	Twice per year

Source Control BMP	Activity	Frequency
S13. Wash Water for Food Preparation Areas	Check that signs are present prohibiting the discharge of wash water from food preparation areas (including outdoor) to areas draining to a storm drain, is prohibited.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Check that all wash water, leaks, and spills are prevented from possible contact with rainwater. Check sinks, berms, and other structures for structural soundness and effectiveness. Maintain or replace any failed structural measures, as needed.	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events >0.5 inches
	Remove trash and debris and sweep outdoor food preparation areas	Weekly

3.2 Inspection and Maintenance of Hydrologic Source Controls

HSCs	Activity	Frequency
Localized On-Lot Infiltration (E.g. Rain Gardens, French Drains)	Confirm presence of HSC. Remove trash. Check facility for excessive sediment accumulation (>~ 1 inch), major erosion, damage, channelization, loss of vegetation, and standing water. Check downspout and flow spreader for damage or clogging. Remove sediment, restore vegetation, scarify soil, and/or otherwise mitigate, as needed, to restore functionality.	Annually
Impervious Area Dispersion (E.g. Downspout Disconnect, Sheet Flow Dispersion)	Confirm presence of HSC. Remove trash from pervious area. Check pervious area erosion, channelization, loss of vegetation. Check downspout and flow spreader for damage or clogging. Decompact, level, reseed, or other activities, as needed, to restore functionality.	Annually
Street Trees	Confirm presence of HSC. Check trees for damage, impaired health, insects, and growth. Prune and maintain trees to avoid impairment of traffic and replace/treat dead or damaged trees.	Annually
Green Roof/Brown Roof	Confirm presence of HSC. Check roof storage for excessive standing water. Check vegetation (if present) for health and coverage. Mitigate any detected issues to restore function, as needed.	N/A
Self-Retaining Areas	Confirm presence of HSC. Any self-retaining areas must be examined for excessive standing water and clogging (meaning they are no longer self-retaining). Mitigate, as needed, to provide full retention of the DCV.	N/A

3.3 Inspection and Maintenance of Structural LID and Hydromodification BMPs

The section is organized by type of structural LID or hydromodification BMP with separate tables for each BMP type included in the project. The section identifies four categories of activities related to O&M of the BMPs:

General Inspections - Evaluations conducted at regularly scheduled intervals to indicate the need for maintenance of structural BMPs.

Routine Maintenance Activities – Activities conducted at regularly scheduled intervals to sustain long-term performance of each BMP, including inspections and normal upkeep.

Corrective (Major) Maintenance Activities – Includes activities conducted to replace or rehabilitate system components at the end of their usable life as well as activities conducted to resolve major issues that are not anticipated.

Emergency Response Activities – Activities related to emergencies, primarily concerning spills, which may require immediate action and notifications (Section 3.4).

BMP ID	BMP Type	Reference Maintenance Table
BMP A1-A3, B1-B3, C1	*Bioinfiltration Basin*	*BIO-1*

BIO-1/BIO-6 Bioinfiltration/Bioretention With Underdrain	
Activity	**Frequency**
GENERAL INSPECTIONS	
Remove trash and debris	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events ≥ 0.5 inches.
Repair eroded facility areas	
Inspect and maintain access roads	
Inspect and resolve areas of standing water	
Remove minor sediment in facility bottom	
Provide vector control if needed	
Identify any needed corrective maintenance that will require site-specific planning or design	
ROUTINE MAINTENANCE	
Vegetation	
Irrigate as recommended by a landscape professional, typically for the first 3 years to establish vegetation	As needed
Remove undesirable vegetation	Four times per year during wet season, including inspection just before the wet season.
Reseed or replant areas of thin or missing vegetation	Annually
Mulch	
Remove and replace mulch in areas where significant sediment (>1 inch) has accumulated	Annually
Add an additional 1-2 inches of mulch; replace any mulch that is removed	Annually
Media Layer	
Scarify media to promote infiltration while removing mulch	Annually
Replace top 3-6 inches of media layer and replace vegetation	Estimated every 10 years (highly site specific)
Replace full depth of media and replace vegetation	Estimated every 30 years (highly site specific)
Inflow, Underdrain and Outflow Structures	

BIO-1/BIO-6 Bioinfiltration/Bioretention With Underdrain	
Activity	**Frequency**
Check energy dissipation function and add riprap	Four times per year during wet season, including inspection just before the wet season.
Inspect inlets and outlets and remove accumulated sediment	Four times per year during wet season, including inspection just before the wet season.
Flush underdrain	As needed
Repair structural damage to inlets, outlets, and underdrain	As needed
CORRECTIVE (MAJOR) MAINTENANCE	
Prepare documentation of issues and resolutions for review by appropriate parties; modify WQMP if needed.	Before major maintenance
Document major maintenance activities; record modified WQMP and as-built plan set if needed	After major maintenance
Take photographs before and after from the same vantage point	Before and after

3.4 Emergency Response Plan

In some cases, adverse conditions may occur which could be an imminent threat to human or environmental health or severe damage to infrastructure or property. For example, a spill of hazardous substances in the contributing area to a BMP could cause harmful substances to enter the BMP and be released downstream, affecting environmental and public health. Other emergencies could arise related to the stormwater features or water quality protection, such as landsliding, major erosion, or burst pipes in the tributary area.

In the event of an actual or suspected hazardous material release, the following plan shall take effect.

The primary importance of initial response to an actual or suspected spill will be public safety, control of the source of pollution, and containment of spills that have occurred, as applicable. The table below provides the emergency contact information for hazardous materials spills affecting BMPs.

Name	Phone	When to Report
Local Emergency Response (Fire Department)	911	Immediately
Orange County 24-Hour Water Pollution Problem Reporting Hotline	1-877-897-7455	Immediately
CalOES State Warning Center	1-800-852-7550	Immediately

The first number to call is emergency response (9-1-1), followed by the California Governor's Office of Emergency Services (CalOES), formerly the California Emergency Management Agency (CalEMA). (CalOES) maintains guidance and instructions of what to do in the event of a spill of hazardous substances (http://www.caloes.ca.gov/cal-oes-divisions/fire-rescue/hazardous-materials/spill-release-reporting). This plan is based on the guidance provided by CalOES (CalOES, 2014).

1. If an actual or suspected hazardous material incident exists, maintenance personnel will immediately call 911 and the CalOES State Warning Center (**Error! Reference source not ound.**).
2. The Designated Emergency Respondent and Responsible Party assigned to the facility (from Section 2.1) must also be notified of any actual or potential spill.
3. Remediation of contamination in the water quality facility should be handled as a corrective maintenance issue per Section 3.2 of this O&M plan.

In the event that a potential spill is identified prior to it reaching the BMPs, the Designated Emergency Respondent will implement an isolation protocol to prevent the spill from entering the BMP. An inflatable plug, Hazmat Plug, or equivalent device as approved by the Designated Emergency Respondent will be installed within the storm drains or catch basins to block upstream flow from reaching and contaminating the BMP. The temporary plug will be an interim measure until the spill is properly maintained and remediated and the Designated Emergency Respondent has determined the risk to the BMP of contamination no longer exists.

Similar measures should be taken in the event of a landslide, mudslide, or major erosion within the tributary area of the BMP to prevent sediment from damaging the BMP to the extent possible.

3.5 Vector Control

In addition to the inspection and maintenance activities listed in Section 3, all BMPs shall be inspected for standing water on a regular basis. Standing water which exists for longer than 72 hours may contribute to mosquito breeding areas. Standing water may indicate that the BMP is not functioning properly and proper action to remedy the situation shall be taken in a timely manner.

Elimination of standing water and managing garbage, lawn clippings, and pet droppings can help decrease the present of mosquitoes and flies in the area.

The Orange County Vector Control District may be contacted for more information and support at 714-971-2421 or 949-654-2421 or www.ocvcd.org.

Attachment 1:Photos and Exhibits

TBD

Attachment 2:Maintenance Agreement and Funding Mechanism Documentation

TBD

Attachment 3:Training Log Form

TRAINING / EDUCATIONAL LOG

Date of Training/Educational Activity: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

Topic of Training/Educational Activity:

_____

_____

Name of Participant	Signature of Participant

For newsletter or mailer educational activities, please include the following information:

- Date of mailing:
- Number distributed:
- Method of distribution:
- Topics addressed:

If a newsletter article was distributed, please include a copy of it.

Attachment 4:Inspection and Maintenance Log Form

BMP OPERATION & MAINTENANCE LOG

PROJECT NAME

Today's Date: _____

Name of Person Performing Activity (Printed): _____

Signature: _____

BMP Name or Type (As Shown in O&M Plan)	Brief Description of Operation, Maintenance, or Inspection Activity Performed	Summary of Notable Observations or Outcomes from Activity

[add additional pages, photographs, drawings, notes as needed]

Attachment 5: Inspection and O&M Checklist (Optional)

Guidance: Based on the BMPs present at the site, this checklist is intended to summarize the activities necessary at each frequency. Include more details if desired.

Weekly Activities	**Check Box**
Selected source control/housekeeping activities (See Section 3.1)	
Monthly Activities	
Selected source control/housekeeping activities (See Section 3.1)	
Quarterly Activities (before wet season, after wet season, plus twice after rain > 0.5 inches)	
Inspections of selected source control BMPs (See Section 3.1)	
Inspections and as-needed minor maintenance of all structural treatment and hydromodification BMPs (See Section 3.3)	
Twice Yearly Activities (during dry weather)	
Dry weather flow inspections (non-structural source control) (See Section 3.1)	
Inspection and as-needed maintenance of other selected source control BMPs(See Section 3.1)	
Annual Activities	
Self-certification (See Section 2.6)	
Various source control BMP and housekeeping activities (See Section 3.1)	
Inspection and maintenance of HSCs (See Section 3.2)	
Various planned maintenance activities of treatment and hydromodification BMPs, such as vegetation maintenance, minor sediment maintenance, etc. (See Section 3.3)	

Attachment 6: Vendor O&M Information

Guidance: Include vendor O&M information for vendor-supplied proprietary BMPs.

Attach O&M criteria derived from Washington State TAPE approval of BMP technology.
http://www.ecy.wa.gov/programs/wq/stormwater/newtech/technologies.html

Appendix H

Trip Generation and Qualitative VMT Memo

December 23, 2022

Nader Alqam, P.E. – Associate Engineer
City of Buena Park
Department of Public Works
6650 Beach Blvd.
Buena Park, CA 90621
nalqam@buenapark.com

Subject: Trip Generation and VMT Screening Memorandum for the Proposed Craig Apartments Project in the City of Buena Park

Dear Mr. Alqam:

Kimley-Horn and Associates, Inc. has prepared a Trip Generation Memorandum to evaluate trip generating characteristics and a Vehicle Miles Traveled (VMT) screening assessment of the proposed Craig Apartments Project (the "Project").

PROJECT DESCRIPTION

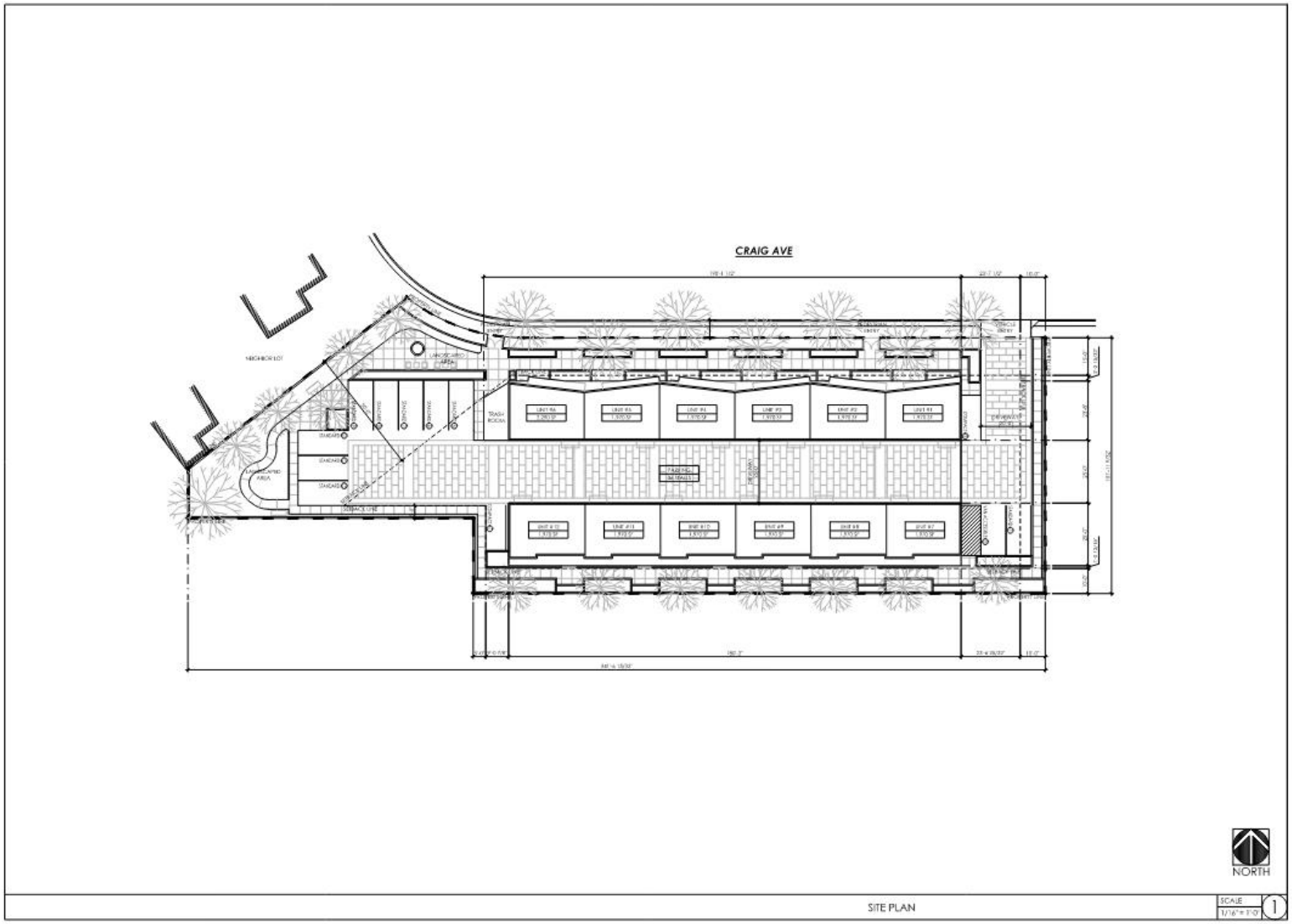
The Project site is located on a vacant and previously graded 0.69-acre lot located at 7682, 7692, 7712, and 7722 Craig Avenue, in the City of Buena Park, Orange County, California, Assessor Parcel Numbers (APNs) 066-132-09, -15, -16, and 17). The Applicant proposes the construction of twelve three-story townhouse-style apartments. The twelve apartments would be divided between two buildings, each containing 6 apartments. The two buildings would be built in tandem with one building facing Craig Avenue and the second building behind building one. The Project would total approximately 23,655 square-feet (SF) of building space and would include drive-in vehicle garages at ground level and two above ground floors of living space. The Project would include perimeter landscaping and green space buffering the Project from the single-family residential dwelling unit (DU) to the west. The Project would include pedestrian walkways, visitor parking, and perimeter/security lighting. Refer to **Table 1, Site Data Summary** and **Figure 1, Conceptual Site Plan.**

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Table 1: Project Summary

Project Element	Proposed Project
Land Use	Low Density Residential (RSF)
Zoning	Single Family Residential (RM-20)
Site Area APN: 066-132-09 APN: 066-132-15 APN: 066-132-16 APN: 066-132-17 Total Site Acreage:	 7,568.24 SF 7,833.48 SF 7,340.70 SF 7,340.70 SF 30,083 SF (0.69 acres)
Floor Ground Floor (Garage) Second Floor (Living Space) Third Floor (Living Space) Total Building Area	 7,885 SF 8,520 SF 7,250 SF 23,655 SF
Floor Area Ratio (FAR)	0.78
Building Height	30'-6"
Lot Coverage	40 percent
Landscaping	4,531 SF (approx. 15% of Project site)
Parking Stalls Standard Parking Accessible (Including 1 van Access) Compact Total:	 21 1 14 36 (24 indoor garage spaces and 12 outdoor spaces)
Source: Andmore Partners. Site Plan. December 6, 2021.	

Figure 1: Conceptual Site Plan



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PROJECT TRAFFIC (TRIP GENERATION)

A trip generation analysis has been performed to determine the net amount of traffic that this Project will generate post-construction. Consistent with the City of Buena Park's guidelines[1], trip generation estimates for the proposed Project are based on the latest Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition, 2022, trip generation rates for the Project are determined following land use: ITE Land Use 220 – Multifamily Housing (Low-Rise) which is the most appropriate for the proposed Project. A low-rise multifamily housing includes apartments, townhouses, and condominiums located within the same building with at least three other dwelling units and that have two or three floors (levels). Various configurations fit this description, including walkup apartment, mansion apartment, and stacked townhouse.

The City of Buena Park's guidelines indicate that a Traffic Impact Analysis (TIA) which includes level of service (LOS) analysis shall be required for a proposed project that meets any of the following criteria:

- When either the AM or PM Peak Hour trip generation is expected to *exceed 40* vehicle trips from the proposed development. Traffic study may be required for smaller projects based on land use and location per City's discretion.
- Projects on the Arterial Highway System which generate 1,600 Average Daily Trips (ADT).

Daily, morning, and evening peak hour trip generation estimates are summarized on **Table 2, Summary of Project Trip Generation**. The Project proposes twelve dwelling units (DU). To provide for a more conservative (higher) estimation, all numbers have been rounded up to the nearest whole number.

Table 2: Summary of Project Trip Generation

Land Use	ITE Code	Unit	Trip Generation Rates1						
			Daily	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Multifamily Housing	220	DU	4.72	0.11	0.27	0.38	0.37	0.24	0.61
Land Use	**ITE Code**	**Unit**	**Trip Generation Estimates**						
			Daily	**AM Peak Hour**			**PM Peak Hour**		
				In	**Out**	**Total**	**In**	**Out**	**Total**
Total Project Trips		12 DU	57	2	3	5	5	3	8
[1] Source: Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition.									

As shown on **Table 2**, the Project is anticipated to generate 57 daily trips to and from the Project site with 5 trips in the AM Peak Hour and 8 trips in the PM Peak Hour. Based on **Table 2**, the Project would not be required to prepare a TIA because it would not generate 40 or more trips during the AM or PM Peak Hours. Additionally, the Project is not located on an Arterial Highway System which generates 1,600 ADT.[2]

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1 City of Buena Park. 2020. *Traffic Impact Analysis Guidelines – 2020 for Vehicle Miles Traveled and Level of Service Assessment*. TIA Guidelines_Final_Buena Park.pdf (revize.com). Accessed October 27, 2022.

2 City of Buena Park. 2017. ADT Volume Map. https://cms7files1.revize.com/buenaparkca/Document_center/City%20Departments/Public%20Works/Traffic%20Services/ADTVolumeMap201711x17.pdf. Accessed October 27, 2022.

VEHICLE MILES TRAVELED

SB 743 was approved by the California legislature in September 2013. SB 743 required changes to the California Environmental Quality Act (CEQA), specifically directing the Governor's Office of Planning and Research (OPR) to develop alternative metrics to the use of vehicular "Level of Service" (LOS) for evaluating transportation projects. OPR has updated guidelines for CEQA and written a technical advisory for evaluating transportation impacts in CEQA and set a deadline of July 2020. OPR has recommended that Vehicle Miles Traveled (VMT) replace also as the primary measure of transportation impacts. OPR Technical Advisory suggests that the City may screen out VMT impact using project size, maps, transit availability, and provision of affordable housing to quickly identify when a project should be expected to cause a less-than significant impact without conducting a detailed study. The City of Buena Park has published Transportation Impact Analysis Guidelines for Vehicle Miles Traveled (2020) and Level of Service Assessment as recommended guidelines for analyzing transportation impacts of proposed development projects.

Per the City of Buena Park, TIA Guidelines (2020), for purposes of SB 743 compliance, a VMT analysis should be conducted for land use projects as deemed necessary by the Traffic Division and would apply to projects that have the potential to increase the baseline VMT per service population (e.g., population plus employment) for the City of Buena Park. Normalizing VMT per service population provides a transportation efficiency metric that the analysis is based on. The NOCC+ tool can be utilized to identify if a project satisfies some components of project screening below; including whether the parcel is in a transit priority area (TPA) or a low VMT generating area. The tool also identifies the potential for project screening based on project type.

Project Screening

There are three types of screening that may be applied to effectively screen projects from project level assessment. These screening steps are summarized below:

Step 1: Transit Priority Area (TPA) Screening

Projects located within a TPA[3] may be presumed to have a less than significant impact absent substantial evidence to the contrary. This presumption may NOT be appropriate if the project:

1. Has a Floor Area Ratio (FAR) of less than 0.75.
2. Includes more parking for use by residents, customers, or employees of the project than required by the City.
3. Is inconsistent with the applicable Sustainable Communities Strategy (as determined by the lead agency, with input from the Southern California Association of Governments [SCAG]); or
4. Replaces affordable residential units with a smaller number of moderate- or high-income residential units.

To determine if the Project is in a TPA, based on the review of "NOCC+," a spreadsheet tool developed for the use of North County Cities in identifying projects that could be considered for screening from project generated VMT impacts was used.

3 TPA is defined as a half mile area around an existing major transit stop or an existing stop along a high-quality transit corridor per the definitions below.

The following findings were made:

1. Floor area ratio (FAR) is the measurement of a building's floor area in relation to the size of the lot/parcel that the building is located on. FAR is expressed as a decimal number and is derived by dividing the total area of the building by the total area of the parcel (building area ÷ lot area). The Project's building area is 23,655 square feet and the total area of the Project site is 30,083 square feet which derives a 0.78 FAR for the Project. Based on the Criteria 1, the Project's FAR is not lower than the 0.75 threshold. As such, the Project meets Criteria 1.

2. According to *Table 19.436.050 Parking Spaces Required*,[4] of the City's Municipal Code, residential (apartment) developments offering (0 to 3 bedrooms) are required to provide 2 garage spaces and 1 additional outdoor parking space. Based on these requirements, the Project is required to provide twenty-four garage parking spaces and twelve outdoor parking spaces, for a total of thirty-six parking spaces. The Project provides exactly what is being required and meets the Parking requirements per *Table 19.436.050 Parking Spaces Required.*

3. Table 3, Project Consistency with SCAG Connect SoCal RTP/SCS, presents an analysis of the Project's consistency with applicable Connect SoCal goals, of the 2020-2045 Regional Transportation Plan/Sustainable Communities Strategy (SRT/SCS).

Table 3: Project Consistency with SCAG Connect SoCal RTP/SCS

RTP/SCS Strategies	Project Consistency
Goal 1: Align the plan investments and policies with improving regional economic development and competitiveness.	**Consistent:** The Project would occur as infill development in developed areas and would increase opportunities to all economic segments.
Goal 2: Maximize mobility and accessibility for all people and goods in the region.	**Consistent**: The Project would not negatively impact the mobility of vehicles or pedestrians around the City because it is not proposing or would not require changes to the existing roadway system. The Project would be located in a largely urban developed area of the City that is adjacent to commercial and allows for easy access to transit services on Beach Boulevard.
Goal 3: Ensure travel safety and reliability for all people and goods in the region.	**Consistent**: The Project would not interfere with any applicable General Plan policies that accommodate all modes of travel in a safe and convenient manner for all users.
Goal 4: Preserve and ensure a sustainable regional transportation system.	**Consistent**: The Project would not interfere with any applicable General Plan policies that are aimed to the furtherance of a sustainable transportation system, through the City's local system. Future housing proposed by the Project would be subject to rezoning. As noted in Table 2, the Project would not add a high number of vehicle trips to the area.
Goal 5: Maximize the productivity of our transportation system.	**Consistent**: The Project would adhere to all applicable General Plan policies that support the creation of a well-connected, productive transportation network. No changes to existing roadway conditions would occur as part of the Project development.

[4] City of Buena Park. 2022. *Table 19.436.050 Parking Spaces Required*. https://library.qcode.us/lib/buena_park_ca/pub/city_code/item/title_19-division_4-chapter_19_436-19_436_050. Accessed November 3, 2022.

RTP/SCS Strategies	Project Consistency
Goal 6: Protect the environment and health for our residents by improving air quality and encouraging active transportation (e.g., bicycle and walking).	**Consistent**: The Project would be consistent with the RCP's long-term goals and policies concerning air quality (see Section 3, Air Quality, of the Initial Study) which notes that the Project would not create a significant air quality impact. Additionally, the Project would provide bicycle parking and walking paths to encourage walking and biking. Moreover, the Project is located adjacent to commercial developments contiguous to the east which residents would be able to access walking, without the need of a vehicle.
Goal 7: Actively encourage and create incentives for energy efficiency, where possible.	**Consistent**: The Project would be required to comply with Title 24 Building Energy Efficiency Standards, which provide minimum efficiency standards related to various building features, including appliances, water, and space heating, and cooling equipment, building insulation and roofing, and lighting. Implementation of the Title 24 standards significantly reduces energy usage. See also Section 6, Energy, of the Initial Study.
Goal 8: Encourage land use and growth patterns that facilitate transit and active transportation.	**Consistent:** The Project would comply with applicable General Plan policies that promote increased walkability and connectivity as well as increased opportunities for alternative modes of transportation as the Project creates a higher intensity on this site with nearby access to transit and commercial uses which would encourage multimodal activities.
Goal 9: Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.	**Not Applicable.** This policy addresses the security of the regional transportation system, which is beyond the proposed Project's scope.
Source: SCAG RTP/SCS Chapter 5: Land Use Strategies	

As is shown by the analysis provided in **Table 3**, the Project would not conflict with Connect SoCal goals of the RTP/SCS. Additionally, as shown in **Figure 2, Priority Growth Areas vs. Regional Growth Constraints (Including High Quality Transit Area)** and **Figure 3, Enlarged Version of the High-Quality Transit Area,** the Project area is located within an existing high quality transit area denoted within the SCAG Connect SoCal, and the land use growth for this area is consistent with SCAG's land use projections.

Therefore, the Project would result in a less than significant impact concerning a potential conflict with a SCAG land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect and the Project is considered to be consistent with Criteria 3.

4. The Project site is devoid of any structures and the site's existing zoning district is RS-6 which allows single-family residential. The Project would change the site's zoning to RM-20 that would allow for multi-family development. The Project would not replace affordable residential units with a smaller number of moderate- or high-income residential units. As such, the Project meets Criteria 4.

In conclusion, based on the Project site's location, the NOCC+ tool and the analysis provided above, the TPA screening criteria is met. Additionally, refer to **Figure 4, North Orange County Cities Transit Priority Areas (TPA)**, for the location of the proposed Project in reference to the designated TPA.

Figure 2: Priority Growth Areas vs. Regional Growth Constraints (Including High Quality Transit Areas)

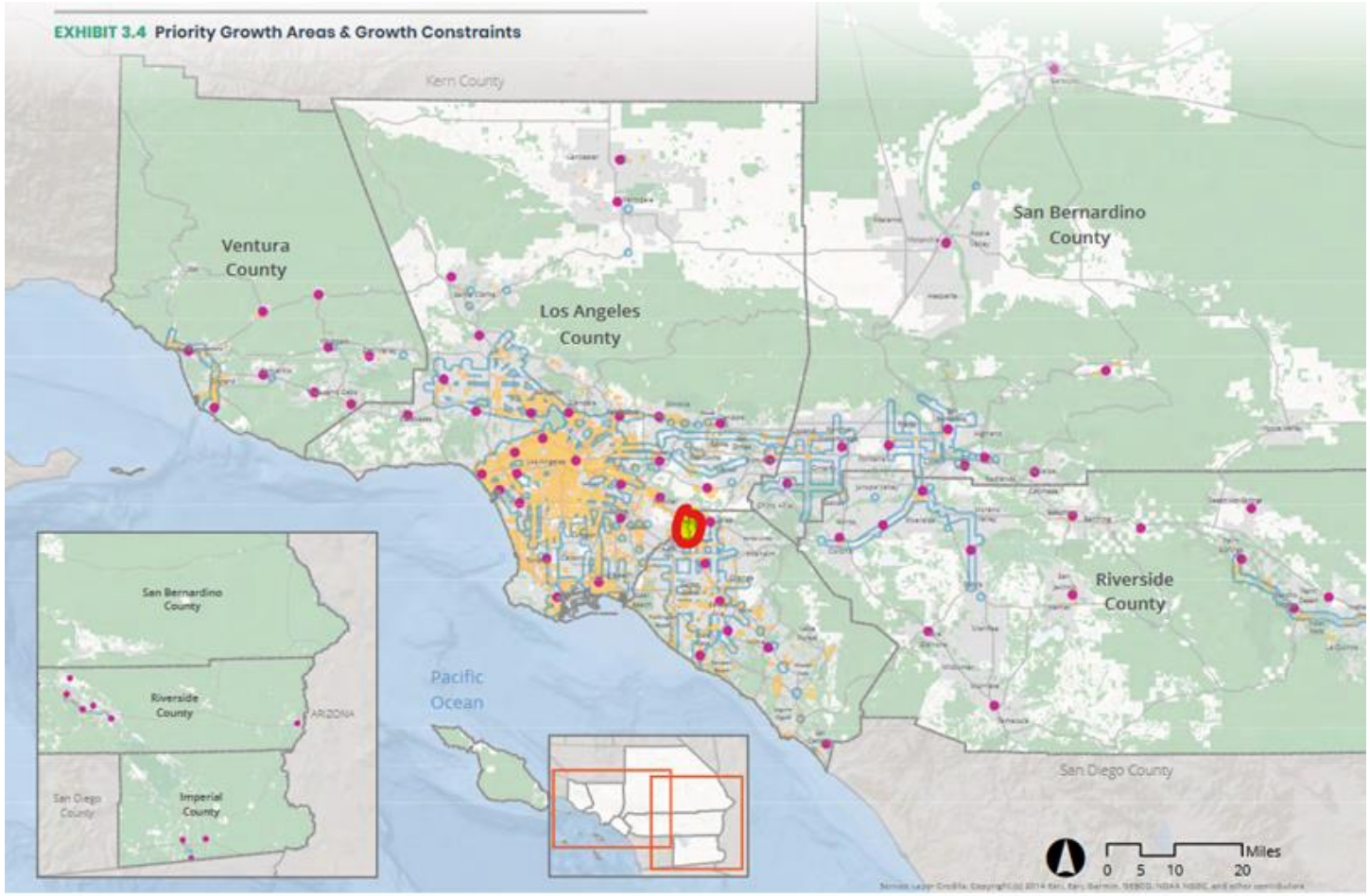


Figure 3: Enlarged Version of the High-Quality Transit Area

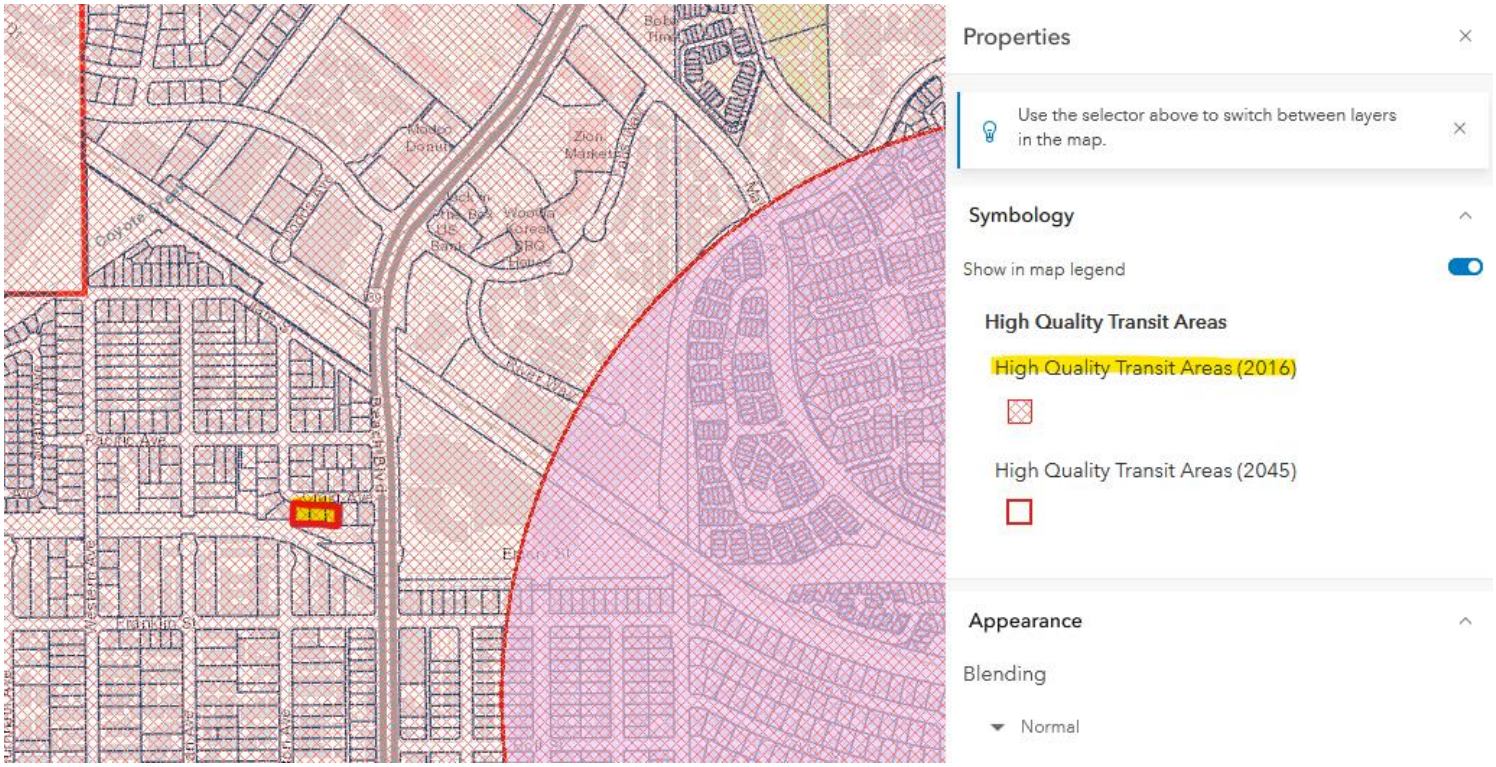
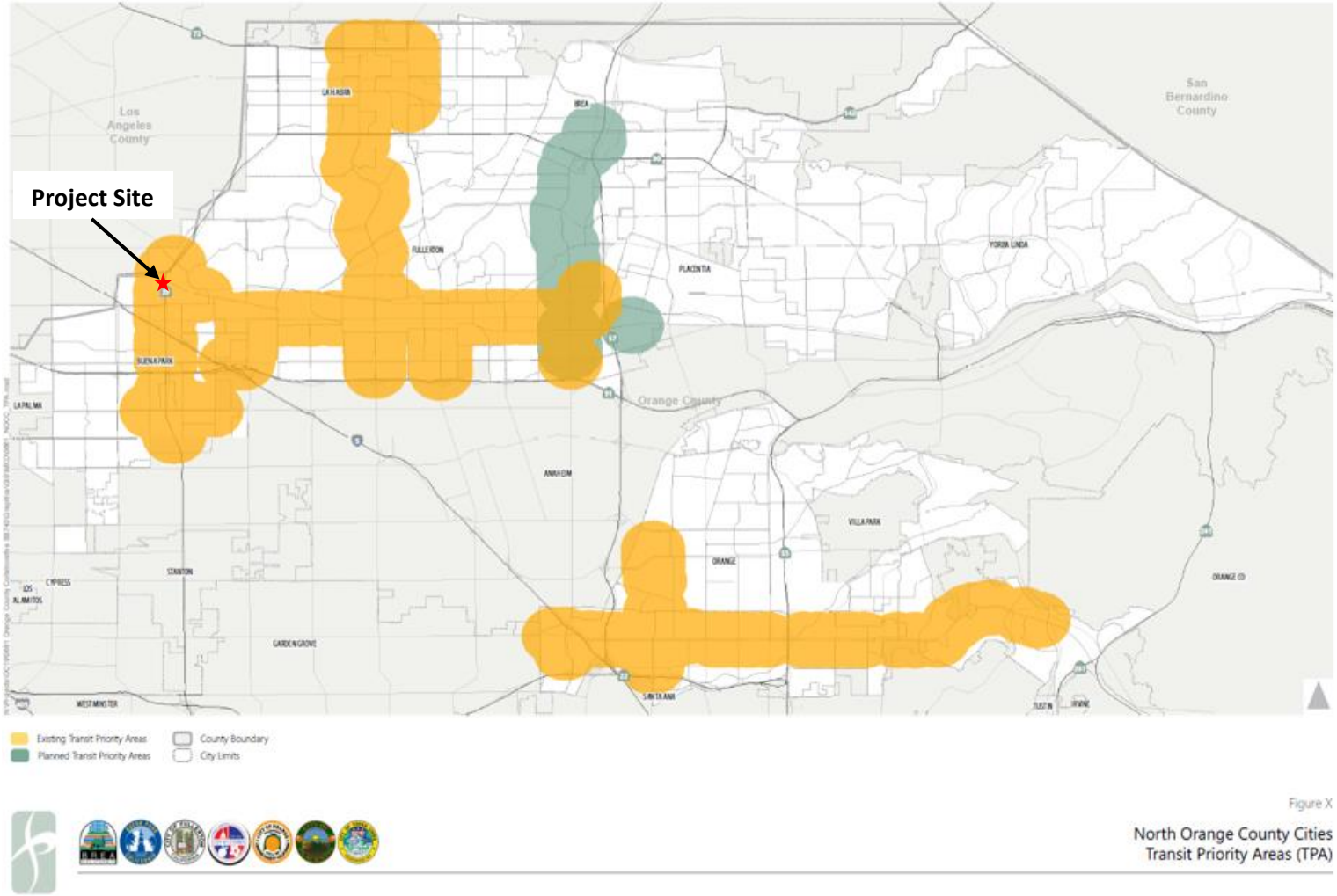


Figure 4: North Orange County Cities Transit Priority Areas (TPA)



Step 2: Low VMT Area Screening

Residential and office projects located within a low VMT-generating area may be presumed to have a less than significant impact absent substantial evidence to the contrary. In addition, other employment-related and mixed-use land use projects may qualify for the use of screening if the project can reasonably be expected to generate VMT per resident, per worker, or per service population that is similar to the existing land uses in the low VMT area. Based on a review of NOCC+ spreadsheet, the Project is located in a low VMT area. Refer to **Figure 5, OCTAM Model Daily Total AD VMT per Service Population for Base Year 2016 Comparison to County Average**, for the location of the Project site in relation to the VMT Area Screening. Further, the Project is consistent with the existing land use within that TAZ.

According to the NOCC+ tool output, see below **Figure 6, North Orange County Collaborative VMT Traffic Study Screening Tool**, the Project meets Step 2 of the Project Screening Criteria, as it is located within a low VMT generating zone. According to the Threshold of Significance Table of the City of Buena Park TIA Guidelines (2020)[5], because the Project meets Step 1, the Project is presumed to have a less than significant VMT impact. Similarly, the Project meets Step 2, which also notes that the Project is presumed to have a less than significant VMT impact since projects located in low VMT generating zones generate total daily VMT that is at least 15% below than the County's average.

[5] City of Buena Park. 2017. *TIA Guidelines, Attachment B – Threshold of Significance Table, page 31*. https://cms7files1.revize.com/buenaparkca/Document_center/City%20Departments/Public%20Works/Traffic%20Services/TIA%20Guidelines_Final_Buena%20Park.pdf. Accessed October 27, 2022.

Figure 5: OCTAM Model Daily Total AD VMT per Service Population for Base Year 2016 Comparison to County Average

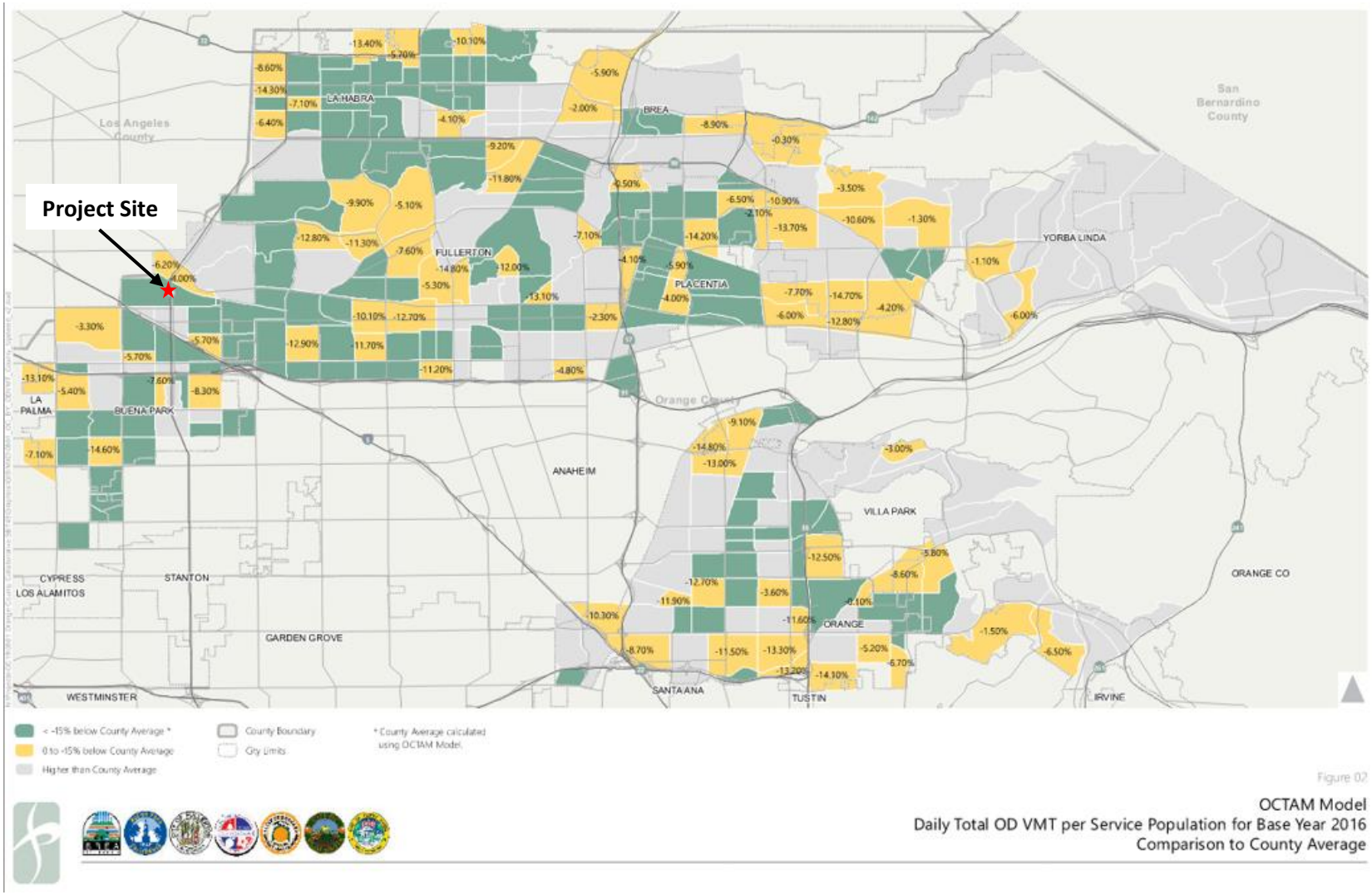
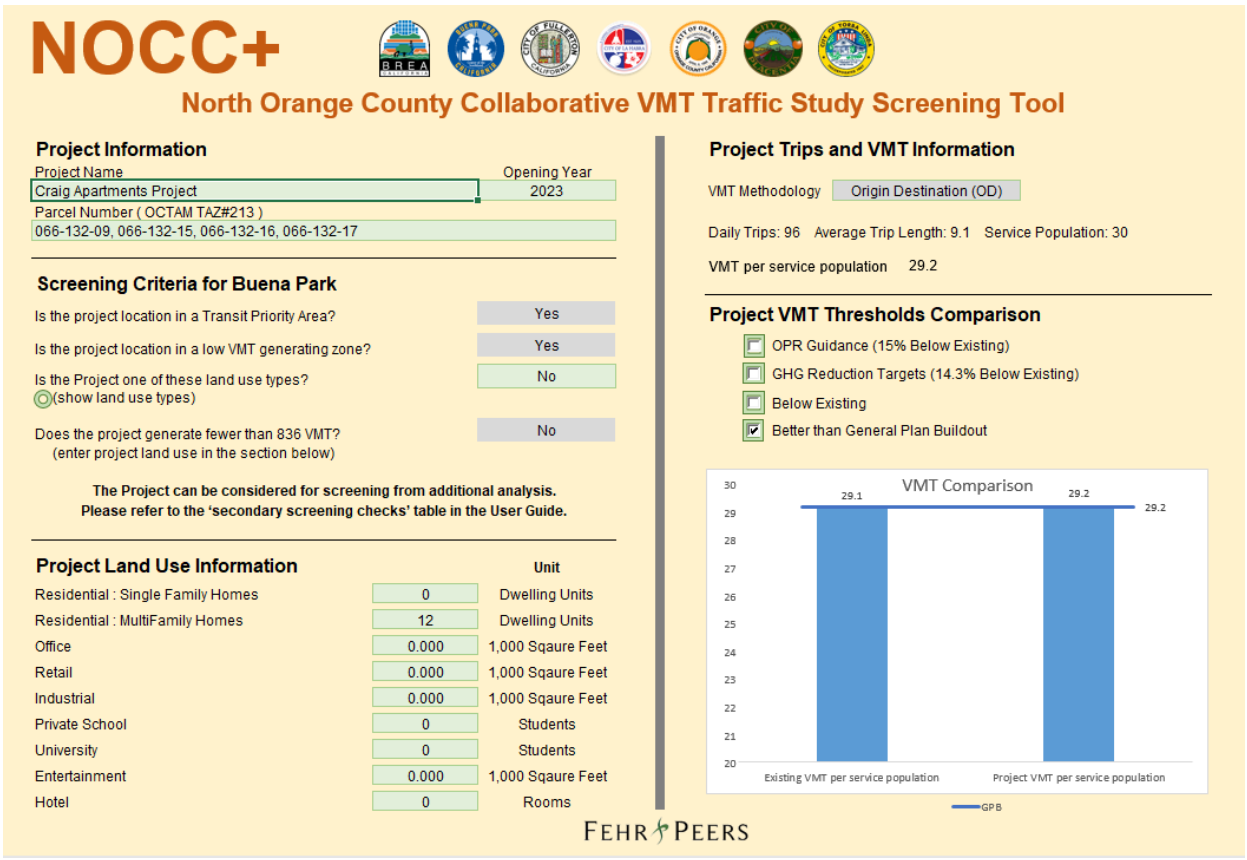


Figure 6: North Orange County Collaborative VMT Traffic Study Screening Tool



Conclusion

Per the City of Buena Park published Transportation Impact Analysis Guidelines for Vehicle Miles Traveled (June 2020) and Level of Service Assessment, projects that generate less than 40 Peak Hour AM and PM trips do not affect LOS significantly and a TIA need *not* be prepared. Additionally, the Project meets Steps 1 and 2, of the VMT screening criteria which concludes that the Project would is located in a TPA and is also located in a low VMT zone. As such, the Project impacts related to transportation are anticipated to be less than significant.

Sincerely,

KIMLEY-HORN AND ASSOCIATES, INC.

Pranesh Tarikere, P.E.